Performance Differences between Portuguese Domestic Firms and Portuguese Multinational Firms

por

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Orientada por

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Biographic Note

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Professionally, he worked in a summer internship in Caixa Geral de Depósitos (2010) and another one in Jumbo Hipermercados – Aveiro (2012), did also Erasmus in Czech Republic (2009/2010) and international volunteering in Ukraine / Crimea (2013) issued by AIESEC (in FEP; in Kiev; in Simferopol).

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Resumo

Embora haja vários estudos que analisam o desempenho das empresas, esta dissertação difere desses estudos na medida em que vem dar um contributo para preencher uma lacuna na literatura que se foca na comparação entre empresas que se internacionalizam para outros países através do Investimento Direto Estrangeiro e empresas que se mantêm no país de origem. Mais ainda, esta dissertação distingue-se também por fazer esta comparação focando-se no panorama português num cenário empírico alargado. Pretende-se, portanto, fazer uma comparação ao nível do desempenho entre empresas portuguesas multinacionais e empresas portuguesas meramente domésticas de modo a averiguar se há, ou não, vantagens em internacionalizar e, caso hajam, em que medidas de desempenho as vantagens / diferenças são mais visíveis.

O enquadramento teórico da dissertação baseia-se nas teorias do IDE e das empresas multinacionais (em suma, Negócios Internacionais), tais como o contributo de Hymer e o seu conceito de vantagem, o Paradigma Eclético, entre outros.

O estudo empírico foi feito utilizando dados extraídos da base de dados SABI (Sistema de Análise de Balanços Ibéricos) e foram aplicados modelos de regressão linear (Pooled OLS) e também em *cross-section*, considerando tanto medidas de Rentabilidade (Profitability – ROS; ROA; ROE; Profit Margin) e de Produtividade (Gross Value Added per Employee).

Os resultados sugerem que as Empresas Multinacionais têm melhor desempenho do que as Empresas Domésticas e que quanto maior for o envolvimento internacional, maior será a sua performance. Foi encontrada evidência de que estas diferenças de desempenho não são iguais entre Produtividade e Rentabilidade. A diferença de Produtividade é muito maior do que a diferença de Rentabilidade. Este estudo apresenta ainda algumas contribuições em termos de políticas a serem aplicadas.

Palavras-chave: Negócios Internacionais; Investimento Direto Estrangeiro; Empresas Multinacionais; Empresas Domésticas; Performance; Lucro; Produtividade; Portugal.

Abstract

Although there are many studies concerning firms' performance, this dissertation comes with the purpose of contributing to fill a gap in the research area that deals with the comparative performance analysis in terms of firms with outward Foreign Direct Investment (OFDI) *vis-à-vis* others that do not undertake outward FDI. Moreover, this dissertation focuses on Portugal, on widen-researched empirical setting, in this regard. Therefore, this dissertation aims to make a comparison, performance-wise, between Portuguese multinational firms and Portuguese domestic firms in order to ascertain whether there are, or not, performance differences and, if there are, in which measures of performance these differences are more notable.

The theoretical background for this dissertation is based on FDI and the multinational enterprise theories (i.e., International Business theories), such as Hymer's concept of advantage, the Eclectic Framework, among others.

The empirical part uses data extracted from SABI's database and the methodology will include an econometric study with Pooled-OLS and Cross-Sectional OLS, considering some Profitability measures (ROS, ROA, ROE, Profit Margin) and Productivity measures (Gross Value Added per Employee).

The results suggest that Multinational Enterprises have a better performance than Domestic Enterprises and that the more internationalized the firm is, the better it will perform. Evidence was found that these performance gaps differ across Productivity and Profitability measures. The Productivity gap between Multinational and Domestic Enterprises is bigger than the Profitability gap. This study also presents some contributions for policy making on the matter.

Keywords: International Business; Foreign Direct Investment; Multinational Enterprises; Domestic Enterprises; Performance; Profitability; Productivity; Portugal.

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CAPM: Capital Asset Pricing Model

DCT: Dynamic Capabilities Theory

DE: Domestic Enterprise

EBIT: Earnings Before Interests and Taxes

EU: European Union

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

GVA: Gross Value Added

HFDI: Horizontal Foreign Direct Investment

IJV: International Joint-Venture

M&A: Mergers & Acquisitions

MNE: Multinational Enterprise

NACE: Statistical Classification of Economic Activities in the European Community

OECD: Organization for Economic Co-operation and Development

OLS: Ordinary Least Squares

OPSAL: Ratio of Operating Cost to Sales

R&D: Research & Development

RBV: Resource-based View of the Firm

ROA: Return on Assets

ROE: Return on Equity

ROIC: Return on Invested Capital

ROS: Return on Sales

SABI: Sistema de Análise de Balanços Ibéricos

SMEs: Small and Medium Enterprises

TFP: Total Factor Productivity

VFDI: Vertical Foreign Direct Investment

Introduction

The aim of this dissertation is to analyze and assess the differences in performance between Portuguese multinationals (i.e. Portuguese firms that undertook outward FDI or, in other words, that have subsidiaries abroad) and domestic Portuguese firms (those who did not conduct FDI).

The rising number of Portuguese outward FDI (UNCTAD, 2011) has not been accompanied by consistent large-scale studies. Thus, there is a need, an opportunity and an undeniable pertinence to analyze these enterprises' performance, comparing them with the ones that did not undertake FDI abroad.

It is of foremost importance to evaluate the performance differences between multinationals (MNEs) and domestic firms in order to achieve a better understanding of the benefits of this entry mode.

Although performance is an increasingly researched matter, there are plenty of opportunities for studies concerning this topic (Bellak, 2004a; Witt & Lewin, 2007; Cardoso, 2008). Most of the studies that confront MNEs with domestic enterprises (DEs) are focused on specific matters like the contribution to the host country's exports (Williamson, 1977), foreign ownership, firm-specific assets, firm characteristics, home country of parent firms and the transnationality of the company (Bellak, 2004b). We propose to study complementary dimensions of performance, such as productivity, profitability, export intensity, taxes, and others.

In Portugal, there is, to the best of our knowledge, only one study focusing on assessing performance differences, but between inward investors to Portugal, and Portuguese domestic firms (Cardoso, 2008). The comparison we aim to make is totally innovative in Portugal, and focused on the opposite flow.

The key research questions to be answered are:

a. Are there performance differences between Portuguese MNEs and Portuguese DEs?
b. Do these differences differ across performance measures, i.e. between productivity, profitability, export intensity, taxes and other measures?

Concerning methodology, this study will include an empirical analysis using large-scale data on Portuguese outward investors and non-outward investors, extracted from the SABI's (*Sistema de Análise de Balanços* Ibéricos) database, applying panel data models and will employ both Pooled and Cross-sectional OLS models.

The dissertation will be divided as follows. This first section presented the motivation and the object of this research. The literature review, in the second part, aims (i) to conduct an analysis of the relevant theories explaining performance differences between MNEs and DEs (ii) to contribute with a literature review on performance measurement and (iii) to review extant literature on the differences between MNEs and DEs. The third part will contain the empirical study where we aim to test empirically these differences in the Portuguese case presenting the used econometric methods, the results and offering a discussion. The final part will conclude and derive policy implications.

Chapter 1. Theoretical Background

1.1. The Concept of Advantage

It is known that for a firm to pursue an internationalization path notably via FDI, it's critical to have some firm-specific advantage that helps the firm overcoming the setbacks of entering a foreign market (Hymer, 1960/1976 in Ietto-Gillies, 2005; Dunning & Lundan, 2008; Lee & Rugman, 2012). In this section we provide a brief review on the firm's specific resources and capabilities that allow it to thrive in the international environment, using Hymer's concept of advantage and the Dunning's Eclectic Framework to explain the importance of the firm's ownership advantage. The Resource-based view of the firm (RBV) an explanation of the importance of the firm's knowledge and resources that combined with the Internalization theory explains why FDI occurs. Finally, the Network Theory and the Dynamic Capabilities helps us realizing how business and personal relationships help the firm develop its international involvement and foreign market knowledge, and how this knowledge improves a firm's ability to achieve an advantage when internationalizing.

1.1.1. Hymer's Contribution

The theory of the MNE has long assumed that when MNEs do business abroad they face some costs (Hymer, 1960/1976 in Ietto-Gillies, 2005) that arise from economic, political and cultural differences, limited knowledge of local regulations and unfamiliarity with the local environment, governmental power (expropriations), and higher coordination costs, among others. According to Hymer (1960/1976 in Ietto-Gillies, 2005) these are "Costs of Foreignness". Later this idea has been taken up by Zaheer (1995) and Zaheer & Mosakowski (1997) that called them "Liability of Foreignness". So it is implied that MNEs must have some firm-specific advantages for instance the "ability to exploit economies of scale and/or scope; access to superior technology; brand recognition, or managerial skills" (Zaheer & Mosakowski, 1997:441)

- that would allow them to overcome these costs and benefit from internationalization. Hymer, in his seminal work (1960/1976 in Ietto-Gillies, 2005), states that these advantages are linked to market imperfections. In Perfect Competition all firms would have access to every resource and FDI wouldn't occur - market imperfections are the main motivation for FDI. Then, it's safe to say that MNEs exist because they take advantage of these imperfections overseas. Also, some authors argue that specific factors that contribute to the liability of foreignness may change over time. For instance, the cultural knowledge of the host market may be acquired by the managers of the foreign affiliate that may adapt the managerial practices considering this knowledge (Zaheer & Mosakowski, 1997).

Overcoming the costs of foreignness (possible if the firm has some firm-specific advantages or capabilities) when internationalization occurs via FDI can lead to a better use of the advantages of transnationality, assuming that the firm has the ability to organize and control their geographically dispersed operations (Ietto-Gillies, 2002).

1.1.2. Dunning's Eclectic Paradigm

The OLI (or Eclectic) Paradigm, developed by Dunning (1977), also addresses the matter of firms' specific advantages and seeks to explain the existence of FDI through the simultaneous combination of Ownership, Location and Internalization advantages. Firm's Ownership-related advantages, based on the OLI framework, include asset-specific advantages (Oa) - the possession of special intangible assets; transaction cost-minimizing advantages (Ot) - the ability to coordinate multi value-adding activities dispersed geographically; and the institutional assets (Oi) - the formal and informal institutions that regulate the processes within the firm, and between the firm and the stakeholders (Dunning & Lundan, 2008). The OLI framework also includes Internalization advantages – when there is greater benefit for the company to exploit the Ownership advantages itself instead of using non-equity solutions, such as Franchising or Licensing; and Location advantages – when the exploitation of the Ownership advantages meets the internationalization objectives of the firm. The Eclectic framework tells us that FDI will occur if, and only if, the firm can combine

these three types of advantages. This gives an explanation to the idea that MNEs need to have an inherent advantage to overcome the costs of foreignness, and the concept of Ownership advantage is the most critical for our purposes. In fact, the Ownership advantages are of great importance when it comes to deciding where to produce, and whether the chosen location helps "it to internalize intermediate product markets" (Dunning, 1993: 80).

As Dunning (1980) highlighted in his article, the Ownership advantages can be divided into three groups. In the first are the advantages which a firm has over other firms (multinational or not) such as market position; managerial skills; R&D capacity; access to markets, etc, similar to Oa in Dunning & Lundan (2008) In the second, advantages stemming from belonging to a larger organization like the access to parent company's capacity in terms of production, supplying, marketing. In the last group are included those advantages that arise from the multinationality of the firm, that is, the international experience puts the firm in a better position to "to take advantage of international differences in factor endowments" (Dunning, 1980: 276). This relates to Dunning & Lundan's (2008) Ot. So Multinationality is, by itself, an Ownership advantage that may allow the MNE to "exploit fully the advantages of internalization in many countries" (Ietto-Gillies, 2005: 114).

1.1.3. Internalization Theory

This theory, based in the work of Coase (1937) and Williamson (1975) on transaction costs was developed by Buckley & Casson (1976), Hennart (1977), Rugman (1981) and others.

The larger a firm gets, the bigger its coordination costs are, depending and varying from firm to firm. As Coase (1937: 394) wrote in his seminal article: "as a firm gets larger (...) the costs of organising additional transactions within the firm may rise". Later, Williamson (1975) introduced three concepts that help the analysis of why internalization gives advantages. They are bounded rationality, opportunistic behaviour and asset specificity. The first is about the rationality inherent to every human decision that is based in information. If the operations are carried out within the firm, the

information about them tends to be better and less limited than when it's externalized. Opportunistic behaviour is eliminated if the firm chooses to internalize the activities, thus eliminating at the same time the loss of control of know-how, costs structure of the operation, etc. Asset specificity influences positively the productivity when used internally, compared to when used by other firms. These are three major explanations why FDI occurs instead of firms operating through market solutions: there are often greater risks on externalizing than on pursuing in-house operations.

Given the market imperfections and uncertainty linked to market operations, Buckley and Casson (1976) assert that the main factors that lead to the internalization decision are industry- (nature of the product and market), region-, nation- and firm-specific (ability to organize and manage the market to be internalized). "Essentially, the internalization theory of the MNE is based on the assumption that transaction costs are high in transborder activities" (Ietto-Gillies, 2005: 103) and, also, it aims to preserve the firm's ownership advantages. So the internalization choice defines a firm as a MNE through its FDI and helps the firm to dodge high transaction costs and market imperfections allowing it to benefit from it (internalization) in terms of performance, achieving better efficiency on its abroad operations offsetting those extra costs. Rugman (1981: 36, 37) also states that "the extra costs for multinationals of operating abroad are more than offset by the benefits they reap from international diversification, sales and earnings."

1.1.4. Resource-based view of the Firm and Dynamic Capabilities

Based on the Penrosean theory (1959), on the endogenous growth of the firm, and developed by Wernerfelt (1984), the Resource-based view (RBV) of the firm sees the MNE as a result of the growth process which extends the firm beyond national borders and regards knowledge and international experience as well as other firm-related capabilities as a "valuable, unique and hard to imitate" (Peng, 2001: 820) as well as non-substitutable (Barney, 1991). Valuable in order to allow the firm to execute strategies that help improve the firm's efficiency and effectiveness; if a valuable resource is possessed by various firms, it cannot be a source of sustained competitive

advantage. Thus it must be unique/rare so that the firm can implement a strategy (based on that resource) that cannot be accompanied by the competition; Hard to imitate resources allow the firm to be innovative enabling itself to conceive new ground breaking strategies; Non-substitutable resources - however the difficulty to imitate a firm's strategy or duplicate its competitive advantage, a competitor may be able to create a new different way to deal with this threat, developing its own resource/strategy (Barney, 1991). The RBV approach states that a firm's specific advantage is based on its resources (tangible and intangible), ergo, the exploitation of firm-specific assets and also on the creation of new ones (Wernerfelt, 1984).

In the process of overcoming their liability of foreignness when internationalizing, MNEs have to figure out the timing and method of entry (Peng, 2001). As they grow successfully global, these questions start to be answered based on the firm's international experience which can be viewed as an intangible resource. This learning process is fastened when it's done through Mergers & Acquisitions and Strategic Alliances with local partners which "facilitate local knowledge acquisition and strengthen firm performance" (Peng, 2001: 812), giving the MNE the edge on performance differences.

Building up on the RBV, the Dynamic Capabilities theory (DCT) also sees the knowledge, know-how and managerial skills itself as an important resource to the firm's competitiveness as it is valuable, rare and hard to imitate (and also because of its complexity) which makes it crucial to the competitive advantage creation. "Dynamic Capabilities" are the ability to adapt, change or integrate managerial skills, resources or competences in a dynamic and timely fashioned way (Teece & Pisano, 1994; Teece et al., 1997). In other words, they refer to the capabilities that will allow the firm to adapt itself to changing market circumstances. These capabilities can be divided into sub categories: Processes – the managerial and organizational routines and practices, integration, learning, reconfiguration and transformation; Positions – the firm's technological property, customer and supplier relations, technological financial complementary and locational assets; and Paths – the strategic alternatives and opportunities (Teece & Pisano, 1994).

In contrast to the Internalization Theory, that uses market failure as an explanation for the internalization of technology in the internationalization process, the DCT explains the same process with the level of coding capacity and the difficulty to teach or transfer each capability or resource, as knowledge or technology (Kogut & Zander, 1993; Teece & Pisano, 1994). This theory asserts that "which is distinctive cannot be bought and sold short of buying the firm itself, or one or more of its subunits" (Teece & Pisano, 1994: 541).

On a global environment and in some cases with hyper competition, the survival of the MNE would be sustained essentially on its ability to exercise difficult-to-imitate dynamic capabilities. This not only addresses the fast "innovation, adaptation and flexibility", but also the "importance of proactive entrepreneurial behaviour" of the MNE (Augier & Teece, 2007: 185). This implies that the firm must have some capabilities that allow it to have a better response to market competitive demands.

Because the MNE operates on a global market, and as constant adaptation to market circumstances is part of the managerial routine, they are able to obtain "superior [...] performance over multiple product life cycles." (Augier & Teece, 2007:188).

1.1.5. Network Theory

In Internalization Theory, the firm develops an intangible firm-specific advantage that gives the firm benefits on the in-house production rather than on market solutions. The Network Theory, contrarily to the "staged" and gradual internationalization theories (Johanson & Vahlne, 1977), states that these development activities depend on the relationships with other firms, that is, on the network position of the firm and its relationships with partners (Coviello & Munro, 1995). This theory features not only the firm but also the network created by itself and customers, suppliers, other business partners and their cooperative relationships (Hadley & Wilson, 2003) whether they're industrial (formal) and social (informal) which helps the firm achieving higher growth rates (Coviello & Munro, 1995; 1997). On the other hand, a firm may become dependent on the network to create business opportunities, so the

network may facilitate or inhibit a firm's internationalization forcing it to diversify outside the network (Coviello & Munro, 1995; Chetty & Holm, 2000).

In the Network approach the MNE can "externalize some of its activities without losing control of its crucial intangible assets" (Johanson & Mattsson, 1988:308), eliminating the opportunistic behavior linked with other contractual entry modes. Based on this approach, the internationalization process can be done through (i) international extension – network created with local firms; (ii) penetration – development of an already existing network; and (iii) international integration – coordination of different networks (Johanson & Mattsson, 1988).

Also, when considering the Network Theory one ought not to ignore the internal network that constitutes a MNE. The MNE itself, as it is spread out geographically, constitutes an integrated web of operations which "represent an important source of innovation" as they have the "ability to sense diverse market needs, technological trends, and competitive actions" (Bartlett & Ghoshal, 1998: 102).

As suggested by Zanfei (2000), MNEs gain access to local knowledge and capabilities, through affiliates located abroad and their relations. In fact this might be one way to overcome the costs of foreignness. Given that a MNE is an international web of (internal and external) relations, i.e. network, they can reach to more sources of innovation that will allow them to perform more efficiently. Hence, networks may be beneficial to innovation and to the technological development of the firm.

1.1.6. Final Remarks

We have asserted that a firm, in order to be successful in its internationalization process, must have some internal advantage(s) that would help them overcoming their liability of foreignness. Dunning's Eclectic Paradigm gives us an important approach to why FDI occurs, explaining that the firm should have, once again, some ownership, location and internalization advantages simultaneously. The ownership advantages, that are central to this study, like a firm's international experience and multinationality, reflect the ability to keep internationalizing successfully. The internalization theory provides us an explanation to why FDI occurs (that is also central to the Eclectic

Paradigm) and to when it is better to invest abroad through internal operations instead of contractual modes. So when FDI occurs, it's because there are advantages in doing it, thus explaining the idea that there must be differences between those firms who internationalize through FDI and those who don't. As to the RBV and Dynamic Capabilities, this approach states that in the firm's resources and capabilities are the main competitive advantage. Through an internationalization and geographic spreading process, these resources tend to develop themselves as the firm grows its knowledge on the foreign market. The Network theory builds upon this as well. As the firm uses its internal and external networks to benefit from their knowledge on foreign markets, they are introduced to new networks. This will ultimately result in a great expansion not only in the business connections and partners, but also in a firm's ability to benefit from it.

Chapter 2. Literature Review

2.1. Firm Performance Measures

Before jumping to the literature review of the relationship between internationalization and performance, we want to first show what kind of proxies were used in previous studies. In this literature review, we found that performance can be measured in many different ways – through profitability measures, productivity measures or others.

2.1.1. Profitability

Concerning profitability, the most used proxies were the financial ratios such as Return on Sales (ROS), Return on Assets (ROA) and Return on Equity (ROE). We also found other profitability measures such as Gross Profit Margin (Elango, 2006), Tobin's Q (Chari et al., 2007), EBIT (Chen & Hsu, 2010) that will also be presented.

Concerning ROS, Grant (1987) when he studied British firms and their multinationality and performance, used different measures do assess the performance of

his sample. One of the measures used as proxy was ROS and the result was that overseas production to total sales ratio had positive impact on firms' ROS and that multinationality has positive impact on performance on a thirteen-year period. Geringer et al. (1989) using ROS to assess the performance implications of diversification and internationalization strategies for US and European MNEs found that there is indeed a positive relationship between internationalization and firm performance but only until a certain point – inverted u-shaped relation which will be addressed later. Luo & Tan (1998) used also ROS and ROA on their comparison between MNEs and DEs performance, concerning the strategic choice (defensive; prospector; analyzer)[1] when internationalizing, in an inward perspective of FDI and found that local firms adapt themselves to the entry of foreign firms. Foreign firms can keep their levels of performance, domestic firms improve their performance because they don't take the internationalization risks and have to innovate in order not to keep competing. Lu & Beamish (2001) with a study focused on Japanese Small and Medium Enterprises (SMEs) found that exporting had a negative linear relationship with performance, mostly because of the appreciation of japanese Yen and that FDI had a nonlinear relationship with performance – u-shaped. Capar & Kotabe (2003) with a sample of 81 service firms found that international diversification has positive impact on performance after a certain level/weight of foreign operations on the firm's total operations (multinationality). Contractor *et al.* (2003) found a three-staged relationship between performance and multinationality, using ROS as measure of performance for 103 firms. Qian et al. (2003) also studied the SMEs in a four-year period using ROS as measure and found that MNEs outperformed domestic firms and concluding that higher the international involvement is, the better they will perform. Brock et al. (2006) with a sample of law firms from the USA and UK found different patterns of effects in those countries but the overall effect, homogeneous to the entire sample, was that international diversification had positive impact on performance after a certain point of

[1] The "Prospector" is a high risk strategy focuses on product development by "scanning, identifying, and capitalizing on (…) market opportunities" (Luo & Tan, 1998:24). It's often connected to first mover strategy and firms adopting this strategy are always looking for market opportunities (Miles & Snow, 1978). The "Defensive" strategy consists on the opposite of the Prospector strategy as the firm maintains its secure and stable position in the market rather than advancing to new product development programs or searching for new opportunities (Miles & Snow, 1978). The "Analyzer" strategy is the place in between the previous strategies. Less risks than prospector strategy but also less commitment to a stable position.

foreign involvement. Besides ROS, they also used Profits per Equity Partner as performance measure. Chiao et al. (2006) also using ROS found that internationalization has positive impact in firm's performance in both industries studied (Electronics and Textile) which also showed a nonlinear relationship. Coombs & Bierly (2006) in their study on technological capability and its implications on performance, using a sample of 201 manufacturing firms and combining it with many proxies, found that investing in technology development would increase shareholder return. Their study has a different object and purpose of our own in terms of multinationality-performance relationship, but it does provide a different perspective on performance measurement. Contractor et al. (2007) analyzed the relationship between international expansion and performance, in India, using not only ROS but also ROA and ROE as performance measures. Their findings were consistent with the U-shaped relationship in the manufacturing firms' sample.

Return on Assets is another ratio used as performance measure. Buckley et al. (1984) used this measure (Net income to Assets ratio) as a proxy for profitability when analyzing the growth of firms between 1972 and 1977. As result they concluded that multinationality does not necessarily have an impact on performance. Grant (1987) also used this ratio but in a different version ("Pre-tax, pre-interest profits as percentage of Net Assets", Grant, 1987:84) but also responded positively to a change in overseas production. Geringer et al. (1989) also used ROA which revealed the same results as ROS: the degree of internationalization has positive impact but only until a certain point, then it stops being productive and the performance starts to decay – inverted u-shaped relationship. Luo & Tan (1998) whose study was already referred in the previous paragraph, used ROA as performance and arrived at the same results for both measures. Gomes & Ramaswamy (1999) also using ROA (among others measures) stated that multinationality brings positive performance impact but only until the optimal point. Lu & Beamish (2001), having both ROS and ROA highly correlated, confined the results to ROA having reach the conclusion that there is a nonlinear impact of multinationality on performance. Kotabe et al. (2002) on their study focused on R&D and its role concerning performance and multinationality, used ROA as proxy to measure financial performance and found that multinationality not only impacts positively on performance, but also that this impact is due to R&D and Advertising

expenditures and intensity. Contractor et al. (2003) also used ROA reaching the same results that were discussed in the previous paragraph as there was a certain degree of collinearity between ROS and ROA. Lu & Beamish (2004) analyzed the veracity of the s-curve hypothesis applied to Japanese firms. Using ROA, they found that there is consistency for their hypothesis and also that the higher the investment in technology and in advertising, the higher the profitability. Barbosa & Louri (2005) in their comparison between foreign-owned and domestic-owned firms in Greece and Portugal concerning the importance of ownership in performance, using ROA as measure, found that in Greece foreign-owned firms perform much better than domestic-owned. Coombs & Bierly (2006), as said before, used many different proxies when measuring the impact of technological capability on performance and to what concerns ROA their findings were that the ratio R&D Expenditures to Total Sales had negative impact on performance. Contractor et al. (2007) found that, for ROA, for manufacturing firms the higher Foreign Sales to Total Sales ratio, the lower the firms perform, as the opposite goes for services firms. So internationalization benefits more the Indian services firms than the manufacturing ones. Kimura & Kiyota (2007), using ROA and other measures, found that foreign-owned firms have superior static indicators and are able reach higher and faster levels of growth when comparing with domestic firms. Using different proxies, Adenaeuer & Heckelei (2011) analyzed the connection between FDI and performance of European agribusiness firms. Concerning ROA, they found no difference of performance.

Return on Equity is the last of the most popular/used ratios. Grant (1987) also used this measure and results are not different than the previous ones (see two previous paragraphs). Chiang & Yu (2005) on their study focused on Taiwanese firms concluded that there is also a positive impact until a certain point. Coombs & Bierly (2006) state that although they use ROE as performance measure, it can be influenced by both changes in debt and equity as well as in the interest rate paid on debt making it difficult to understand if its behavior. Hsu (2006) also studied the s-curve hypothesis on 55 pharmaceutical companies in a four-year period. Using ROE as measure, the main finding was that companies benefit from internationalization activities but could not prove the existence of the s-curve for his sample. Contractor et al. (2007) found a proportional relationship between Foreign Sales to Total Sales ratio and ROE, being

that this relationship is nonlinear. Kimura & Kiyota (2007) and Adenaeuer & Heckelei (2011) used this measure as well and the results were presented in the previous paragraphs, as they don't differ across measures.

Other profitability measures were found in studies like the one carried out by Michel & Shaked (1986) which used market-base measures such as the Risk-adjusted Return using the Sharpe, Treynor and Jensen measures[2] and applying the Capital Asset Pricing Model (CAPM) to obtain the betas. As result they found that although MNEs are bigger in terms of firm size, it does not explain the findings in which DEs present higher risks suggesting that the latter ones have better performance. Collins (1990) also used Sharpe, Treynor and Jensen measures to assess the Risk Return in a comparison between US firms that were active in domestic, developed and developing countries. He found that firms operating on domestic market and developed countries got higher returns and higher risk measures, hence higher performance. He also found that there were higher rates of return for FDI and that there was no benefit in diversifying to developing countries as they presented low risk and low return.

Benvignati (1987) used a rate of profit calculated using Operating Income in each line of business minus the estimated capital costs divided by sales. The main finding of this study was that multinational firms have higher profits than the firms operating solely in domestic industries. Gomes & Ramaswamy (1999) in order to account for Operational Outcomes used "a ratio of operating cost to sales (OPSAL)" (Gomes & Ramaswamy, 1999:181) and also found a nonlinear relationship. Kotabe et al. (2002) besides using ROA, also used Sales to Operating Costs ratio to evaluate the Operational Outcome and the results were similar to the ones concerning ROA in the same study.

Elango (2006) in order to assess the impact of internationalization on performance used Gross Profit Margin as profitability measure. He analyzed this relationship for 12 emerging markets and the main findings were a nonlinear relationship for manufacturing firms and a positive linear relationship for services firm.

Some authors used Tobin's Q as their proxy. Lu & Beamish (2004) studied the impact of international diversification on performance and also used ROA and the

[2] Sharpe and Treynor measures "determine the premium of a security's return per unit of risk" and Jensen "evaluates the difference between the security's expected return and its actual return" (Michel & Shaked, 1986:93).

results were that higher advertising expenditures and investment in technology lead to greater profitability. Chari et al. (2007) also analyzed the importance of technology investments on the relationship between international diversification and firm performance and found that multinationality impacts positively in a firms' performance, especially if it's a firm with high technology investment.

Chen & Hsu (2010) using Earnings Before Interest and Taxes (EBIT) as proxy for performance measurement, analyzed a sample of Taiwanese firms in a 5 year period and found a nonlinear relationship between internationalization and performance and also between advertising expenditures and performance. They also found that R&D expenditures have positive impact on performance.

Adenaeuer & Heckelei (2011), as said before, used many different measures and found that firms undertaking FDI had better Revenues, Profits before Taxes and Profit margins than the domestic counterparts. These results were the same for other proxies such as Return on Invested Capital (ROIC). Chang & Rhee (2011) also used ROIC to evaluate how important was the speed of the internationalization process in terms of firm performance. They found that rapid FDI has no main effect on firm performance unless the firm has high marketing capabilities or strong brand equity, and that fast international expansion is more favorable for industries facing intense global competition.

Assaf et al (2012) using Total Costs logarithmized found that cost efficiency could increase performance if the internationalization process was undertaken majorly through Mergers & Acquisitions (M&A) and done in an early stage of internationalization process. So it is a remark on how fast the internationalization process should be. They also found a counterproductive home country effect, i.e., if home country GDP increases, there would be lesser gains from the internationalization process in terms of performance.

The Table 1 sums the studies that used Profitability as measure and their results as well.

Table 1 - Literature Review on Performance Measured by Profitability Measures

Authors	Year	Title	Sample	Measures Used	Result
Adenaeuer & Heckelei	2011	FDI and the performance of European Agribusiness Firms	1687 firms with plants only in EU-15; 314 firms with in and out of EU-15	Profitability & Productivity	Advantage MNE
Chen & Hsu	2010	Internationalization, Resource Allocation and Firm Performance	224 Taiwan Stock Exchange-listed electronics & IT firms (2000-2005)	Profitability	Advantage MNE
Chari, Devaraj & David	2007	International diversification and firm performance: Role of Information Technology Investments	131 firms, 1997	Profitability	Advantage MNE
Contractor, Kumar & Kundu	2007	Nature of the Relationship between international expansion and performance: The case of emerging markets firms	269 Indian firms, 1997-2001. 142 manufacturing; 127 services	Profitability	Advantage MNE
Kimura & Kiyota	2007	Foreign-owned vs. Domestically-owned firms: economic performance in Japan	22.250 firms (21.716 DEs; 534 MNEs) between 1994 and 1998)	Profitability & Productivity	Advantage MNE
Brock, Yaffe & Dembovsky	2006	International diversification and performance: a study of global law firms	76 US firms; 13 UK firms (2003)	Profitability	Advantage MNE
Chiao, Yang & Yu	2006	Performance, Internationalization and Firm-Specific Advantages of SMEs in a Newly-Industrialized Economy	1419 Taiwanese SMEs (1996). 818 electronics industry + 601 textile	Profitability	Advantage MNE
Elango	2006	An Empirical Analysis of the Internationalization-Performance Relationship Across Emerging Market Firms	719 firms from 12 emerging markets. 393 manufacturing, 326 services	Profitability	Advantage MNE

Hsu	2006	Internationalization and Performance: The S-curve Hypothesis and Product Diversity Effect	55 global pharmaceutical/ biotechnological firms; (1996-2000); many countries	Profitability	Advantage MNE
Barbosa & Louri	2005	Corporate Performance: Does ownership matter? A comparison of Foreign- and Domestic-Owned Firms in Greece and Portugal	523 Portuguese firms (1992); 2651 Greek firms (1997)	Profitability	Inconclusive
Chiang & Yu	2005	The Relationship between Multinationality and the Performance of Taiwan firms	119 Taiwanese Companies, 1998-2002 = 595 observations	Profitability	Advantage MNE
Lu & Beamish	2004	International Diversification and Firm performance: the s-curve hypothesis	1489 Japanese firms, 1987 to 1997	Profitability	Advantage MNE
Capar & Kotabe	2003	The Relationship between International Diversification and Performance in Service Firms	81 German service firms (1997 - 1999)	Profitability	Advantage MNE
Contractor, Kundu & Hsu	2003	A three-stage theory of international expansion: the link between multinationality and performance in the service sector	11 service industries, 103 firms	Profitability	Advantage MNE
Qian, Yang & Wang	2003	Does multinationality affect profit performance? Na empirical study of SMEs	271 US firms (1993-1997)	Profitability	Advantage MNE
Kotabe, Srinivasan & Aulakh	2002	Multinationality and Firm Performance: The Moderating Role of R&D and Marketing Capabilities	49 US firms from 12 different industries; 1987-1993	Profitability	Advantage MNE

Lu & Beamish	2001	The internationalization and Performance of SMEs	164 Japanese SMEs from19 different industries, as defined by the Nikkei stock market (1986-1997)	Profitability	Advantage MNE
Gomes & Ramaswamy	1999	An empirical examination of the form of the relationship between multinationality and performance	95 firms (28 chemicals; 14 drugs and pharmaceuticals; 24 computers and computer office; 29 electrical products)	Profitability	Advantage MNE
Luo & Tan	1998	A comparison of multinational and domestic firms in an emerging market: a strategic choice perspective	60 state Chinese firms (electronics industry); 51 MNE subunits	Profitability	Inconclusive
Collins	1990	A market performance comparison of US firms active in Domestic, Developed and developing countries	133 firms (51 domestic, 44 in developed countries, 38 in developing countries), from January 1976 to June 1985	Profitability	Advantage MNE
Geringer, Beamish & DaCosta	1989	Diversification strategy and internationalization implications for MNE performance	200 MNE (US and European), 1982 - 1983	Profitability	Advantage MNE
Benvignati	1987	Domestic Profit Advantages of Multinational Firms	2635 lines of business of 457 US manufacturing firms, 1975	Profitability	Advantage MNE
Grant	1987	Multinationality and performance among British manufacturing companies	304 large firms, 1972-1984	Profitability	Advantage MNE
Michel & Shaked	1986	Multinational Corporations vs. Domestic Corporations: financial performance and characteristics	58 US-based MNEs; 43 DMCs; 1973 - 1982;	Profitability	Advantage DE
Buckley, Dunning & Pearce	1984	An analysis of the growth and profitability of world's largest firms between 1972 and 1977	535 firms in 1972, 866 firms in 1977; US and non-US firms.	Profitability	Inconclusive

Source: Own elaboration.

The majority of these studies conclude in favour of an advantage for MNEs, allowing us to hypothesize, as purpose for our study, as follows:

H1: MNEs have higher profitability than DEs.

2.1.2. Productivity

As Productivity measures, our literature review revealed different points of view. Total Factor Productivity may be the most used by authors focusing their analysis on productivity (Kimura & Kiyota, 2007; Temouri et al., 2008; Adenaeuer & Heckelei, 2011; Hayakawa et al., 2013).

Davies & Lyons (1991) in their study used Gross Value Added as productivity measure and as result they found that foreign-owned firms have better productivity than domestically-owned. They also state that the transfer pricing has a major role on this performance difference. Al-Obaidan & Scully (1995) used Labour to Sales and Labour to Output ratios to analyze the benefits of multinationality for a sample of oil companies and as conclusions they argue that for the oil industry it is better to internalize some markets in order to overcome some costs of being foreigner. Girma et al. (2004) used Sales, Value Added and Net Profit all divided by the number of employees. This way, they were able to evaluate the efficiency of having more (multinationals) or less (domestic firms) employees and the first ones got the better results. Anastassopoulos et al. (2007) also used a "per employee" ratio, this time with Turnover in the nominator, and found that MNEs outperform the Domestic competitors. They also analyzed the ownership matter comparing majority owned MNEs to minority owned MNEs reaching the conclusion that the latter perform better as they make use of local knowledge. Adenaeuer & Heckelei (2011) used Revenue per Employee, Labour Costs per Employee and Profit per Employee in their study. They found greater productivity in MNEs than in DEs but state that this was not related to also greater labour productivity.

Total Factor Productivity (TFP), as said before, is the most used measured when it comes to productivity analysis. Kimura & Kiyota (2007) besides ROA and ROE, also used TFP and its results were the same as the ones for profitability measures. Temouri

et al. (2008) used TFP to analyze productivity differences between MNEs and DEs in Germany. The result was that DEs were less productive than German MNEs and foreign MNEs showed the productivity advantage in some industries. Hayakawa et al. (2013) wanted to measure the impact of outward FDI on performance at Japanese firms using TFP and found differences of outcomes between horizontal FDI (HFDI) and vertical FDI (VFDI). HFDI had few impacts on production workers and cost efficiency as VFDI showed few changes in firms' performance in home country.

The Table 2 sums the studies that used Profitability as measure and their conclusions as well.

Table 2 - Literature Review on Performance Measured by Productivity Measures

Authors	Year	Title	Sample	Measures Used	Result
Hayakawa, Matsuura, Motohashi & Obashi	2013	Two-dimensional analysis of the impact of outward FDI on performance at home: Evidence from Japanese manufacturing firms	Sample 1: all Japanese firms with more than 50 employees; Sample 2: constructed by aggregating the manufacturing plant-level census data, Census of Manufacturers on a firm basis; 1992 to 2005	Productivity	Advantage MNE
Temouri, Driffield & Higón	2008	Analysis of Productivity Differences among Foreign and Domestic Firms: Evidence from Germany	22 manufacturing firms; 17 service firms; 1995-2004	Productivity	Advantage MNE
Girma, Gorg & Strobl	2004	Exports, international investment, and plant performance: evidence from a non-parametric test	Manufacturing plants in Republic of Ireland with more than 10 employees; year 2000.	Productivity	Advantage MNE
Ramstetter	1999	Comparisons of Foreign Multinationals and Local Firms in Asian Manufacturing Over Time	firms from Hong-King; Malaysia; Indonesia; Singapore; Taiwan; 1970 to 1996	Productivity	Advantage MNE
Al-Obaidan & Scully	1995	The Theory and measurement of the net benefits of multinationality: the case of the international petroleum industry	44 oil companies, 1976-82; 25 different countries	Productivity	Inconclusive

Davies & Lyons	1991	Characterizing relative performance: The productivity advantage of foreign owned firms in the UK	(1971-1987)	Productivity	Advantage MNE

Source: Own elaboration.

As we can see all, except one, studies point to a clear advantage of the MNE when using Productivity measures. Thus, based on the reviewed literature, we hypothesize:

H2: MNEs have higher productivity than DEs.

2.1.3. Other Measures

Brewer (1981) used stock return to study whether it was more profitable to invest in a MNE or DE and found that the latter cannot provide benefits like the ones MNEs help achieve. Geringer & Hebert (1991) wanted to analyze the performance of International Joint-Ventures (IJV) and they measured it through survival, stability and duration of the IJV using binary variables for the first two, that is, whether or not the IJV was still operating "from the time of its formation until 1988" (Geringer & Hebert, 1991:254); for Stability the dummy was based on whether there were changes in IJV equity; Duration's measurement was done using "the number of years between the IJV's formation and either its termination or the collection of performance data" (Geringer & Hebert, 1991: 255).

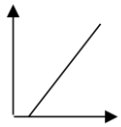
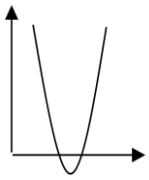
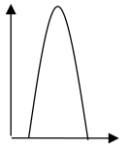
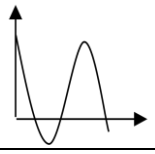
Over the years, the study of the relationship between internationalization and performance has emphasized the importance of different variables that might have an impact on this relationship, like International Diversification that may derive from the weight of employees deployed abroad (Brock et al., 2006), or from Foreign Sales to Total Sales ratio (Capar & Kotabe, 2003; Elango, 2006; Contractor et al., 2007) or Level of Internationalization derived from the "number of foreign countries in which they had subsidiaries in a given year" (Chen & Hsu, 2010: 1106); Firm Size as the logarithmic number of employees (Barbosa & Louri, 2005; Brock et al.,2006; Capar & Kotabe, 2003), as "logarithmic function of total assets" (Chiang & Yu, 2005: 132) or as

"the natural logarithm of total sales" (Contractor et al., 2007: 410) among others. For a better understanding of a firm's performance, there were also included industry-specific measures for a better analysis of the firm's market environment – Industry Growth; Intensity of Foreign Firms in the Industry, R&D Expenditures (Barbosa & Louri, 2005).

2.2. The internationalization-performance relationship

Nowadays we have four mainstream perspectives concerning the nature of the relationship between internationalization / multinationality and performance. As the following table shows, there is no consensus among the authors. The first model (Grant, 1987; Elango, 2006) finds a linear relationship, i.e., when a firm expands its business overseas increasing their degree of multinationality, there is a linear impact and response of the firm's performance. Some authors, like Capar & Kotabe (2003), Contractor et al. (2007) and Chen & Hsu (2010) found a nonlinear relationship in which the degree of multinationality, at first, was counterproductive in terms of impact on performance, but only until a certain point. "Beyond that threshold, the benefits of multinational diversification may outweigh the relevant costs involved, thereby generating performance gains" (Mathur et al., 2001: 576), hence the U-shaped relationship. On the opposite hand, the Inverted U-shaped Relationship shows that increasing levels of internationalization impact positively on performance only until a certain break-even point is passed where we can find the optimum level of internationalization. After that, there's negative impact on performance. As to the S-shaped Relationship, it's characterized by the use of the time variable in a three-stage model proposed by Contractor *et al.* (2003) where we have negative impact in a first stage which like the U-shaped relationship indicates losses from the internationalization process, then we see a positive slope in the second part indicating a recovery of those losses and compensating them, and finally the negative slope in the third stage.

Table 3 - Internationalization-Performance Relationship Mainstream Perspectives

Theory	Graphic Shape	Performance Measure	Reference
Linear Relationship		Sales Growth; RONA; ROS; ROE	Grant (1987)
		ROA	Grant *et al.* (1988)
		ROS	Tallman & Li (1996)
		Gross Profit Margin	Elango (2006)
U-shaped Relationship		ROE; ROA; Pretax Operating Margin	Mathur et al. (2001)
		ROS	Capar & Kotabe (2003)
		ROA	Ruigrok & Wagner (2003)
		ROA; ROE; ROS	Contractor *et al.* (2007)
		EBIT	Chen & Hsu (2010)
		Cost Efficiency	Assaf *et al.* (2012)
Inverted U-shaped Relationship		ROS	Brock *et al.* (2006)
		ROE	Chiang & Yu (2005)
		ROS	Chiao *et al.* (2006)
		Gross Profit Margin	Elango (2006)
		ROS; ROA	Geringer *et al.* (1989)
		ROA; Ratio of Operating Costs to Sales	Gomes & Ramaswamy (1999)
S-shaped Relationship		ROS;ROA	Contractor *et al.*(2003)
		ROE; ROA	Thomas & Eden (2004)

Source: Own elaboration based on Cardoso (2008).

2.3. MNE vs. DE Performance

Concerning performance gaps between MNEs and DEs, and to the best of our knowledge, there are few studies that focus on the comparison between MNEs and DEs concerning OFDI. Nevertheless, there are those which compare these two in different situations (e.g. Imbriani et al., 2011; Hayakawa et al., 2012). The studies we found and analyzed come up with three outcomes: (a) MNEs have better performance than DEs; (b) DEs outperform MNEs and (c) some cases were inconclusive or with some complex

interpretation. Thus we divided this section by those three outcomes and presenting, lastly, a table summarizing our performance comparison literature review.

2.3.1. MNEs have superior performance than DEs

From the studies included in Annex I, the majority of them presented the conclusion that MNEs outperform DEs. Some of these studies focused their research on Asian countries (Ramstetter, 1999; Lu & Beamish, 2001, 2004; Chiang & Yu, 2005; Chiao et al., 2006; Contractor et al., 2007; Kimura & Kiyota, 2007; Chen & Hsu, 2010; Hayakawa et al., 2012), other used European firms (Davies & Lyons, 1991; Capar & Kotabe, 2003; Girma et al., 2004; Anastassopoulos et al., 2007; Temouri et al., 2008; Imbriani et al., 2011) or US firms (Brewer, 1981; Benvignati, 1987; Grant, 1987; Lee & Kwok, 1988; Geringer et al., 1989; Qian et al., 2003; Brock et al., 2006). Besides Imbriani et al. (2011) which used a binary dependent variable (to be or not a multinational) with matching techniques as main methodology, almost all used Profitability measures as proxy for performance. Others used Productivity (Davies & Lyons, 1991; Ramstetter, 1999; Girma et al., 2004; Temouri et al., 2008; Hayakawa et al., 2013) or both (Anastassopoulos et al., 2007; Kimura & Kiyota, 2007; Adenaeuer & Heckelei, 2011).

2.3.2. DEs have superior performance than MNEs

Concerning the studies which found the opposite of the previous ones, we have a total of three. Michel & Shaked (1986) used the Risk-adjusted Return to analyze the differences between MNEs and DEs and found that DEs have superior risk-adjusted performance, thus having higher total and systematic risk providing a higher return, for all their measures (Sharpe, Treynor and Jensen).

Kim & Lyn (1990) used some financial and accounting-based ratios (Earnings per Share; ROE; Gross Profit Margin and Operating Profit Margin) to assess if foreign-owned firms operating in US enjoyed advantages over US firms operating solely in their

domestic market. Although US firms spend less in R&D and in Advertising than foreign-owned firms, they tend to be more efficient than the latter.

Mathur et al. (2001) with a sample of Canadian firms studied differences between local and multinational firms. Using ROE, ROA and Pretax Operating Margin they found that DEs have better performance for all the proxies in all of the sample time period. They also tested for internationalization effect on firm performance and found a nonlinear relation between these two similar to the u-shaped theory.

2.3.3. Inconclusive cases

There were some cases we found whose final conclusion wasn't as consistent as they should be or couldn't be just labeled as only advantage for one side for having many conditions to its conclusions. Buckley et al. (1984) studied the growth and profitability of many US and non-US firms in the 1970s. Using sales growth rate and profitability (proxied by Net income to asset ratio), they've reached some inconsistent results being that for one of the sample's years the results were insignificant for the full sample. So multinationality couldn't even be accounted as contributor for the variance in growth and profitability of both sets of firms.

Al-Obaidan & Scully (1995) used productivity measures to analyze the net benefits of multinationality. As result they found that (a) multinationality increases efficiency and reduces business risks and at the same time (b) it causes reduction in firm's overall efficiency because of the costs incurring from the internationalization process. They state that the best strategy may be internalizing some markets so that the benefits could overcome costs (Internalization Theory).

Luo & Tan (1998) compared MNEs and DEs in the Chinese electronic industry with profitability measures (ROS, ROA, Average Sales Growth). In this case, the result of their study was inconclusive because their comparison was based on the strategic behavior and philosophy of the firm (Defender; Analyzer and Prospector). They found that MNEs and DEs did not imitate their competitor hence adjusting to the market. MNEs follow mostly an Analyzer strategy as in the case of Local firms in order to

protect their market position adopted a Defender posture. Each thrived in their own way not having a significant difference in terms of performance.

Barbosa & Louri (2005) also compared domestic and foreign firms but focusing the ownership influence on performance (ROA). For the Greek sample they actually found that foreign firms perform better than domestic but for the Portuguese one there were no significant differences. Given these different results we couldn't just label this study as "Advantage MNE" as there was an inconclusive part in the study.

Chapter 3. Methodology

3.1. Data

This study uses firm-level data extracted from the SABI (*Sistema de Análise de Balanços Ibéricos*) – Bureau van Dijk's database (last update on January 6th, 2014), which contains financial and corporate information on 500 thousand and 2 million firms located in Portugal and Spain, respectively.

The main purpose of this dissertation is to assess whether there are differences in performance between Portuguese DEs and Portuguese MNEs, and, if so, in what performance variables are those differences more relevant. The present analysis implies that we needed two samples to work with (Portuguese DE and Portuguese MNEs). Due double counting problems, we needed to extract a third one, containing foreign-owned firms that would allow us to purge the duplicates on the first two samples. Initially, all samples were extracted for the period between 2002 and 2012, but later we found that this period did not granted us the data quality we needed. Thusly we shortened it to a 5 year period between 2008 and 2012.

The criteria set for the extraction was as follows. In order not to get our database biased by the size of the much smaller enterprises, we set the minimum of employees for each firm to be 10 employees. This number is based on the European Union definition of a Micro Companies. Since we also need to guarantee the multinational status and the domestic status for our samples and to differentiate DEs from domestic MNEs from foreign MNEs, we used a criterion based on OECD benchmark definition for Foreign Direct Investment – "10% or more of the voting power of an enterprise resident in one economy by an investor resident in another" (OECD, 2008: 48, 49). So for the Sample 1, that is the DE sample, we set that (1) the owner has to be Portuguese and owning at least 90% and (2) companies must have 10 or more employees, thus excluding Micro-Companies (European Union-based nomenclature). The Sample 2, relative to the Portuguese MNEs was extracted with the following criteria: (1) Portuguese firms with foreign subsidiaries owned by at least 10%; and (2) also must have 10 or more employees. Since we need to eliminate the duplicated observations

from both samples, we extracted a third sample (Sample 3) of firms operating in Portugal owned by a foreign shareholder by at least 10% and also with at least 10 employees. The procedure for eliminating the double counting problem was: (a) eliminate the firms from Sample 3 contemplated in Sample 2 (MNE sample) which gave us a final MNE sample of 536 firms (from the initial 624). Then (b) we eliminated the remaining firms of both Portuguese and Foreign MNEs that exist also in the DEs sample [taking Sample 2 and 3 repeated firms from Sample 1] which ended with a total of 44290 firms (from the initial 45115).

We also wanted to guarantee continuous data for each company throughout the entire period, so we've only kept the firms that were able to give us data in each of the 5 years of the period for some central variables. This left us with 18.941 DEs (6171 of which are Manufacturers) and 408 MNEs (192 of which are Manufacturers). Synthesizing, by manufacturing subsectors:

Table 4 – Manufacturing subsectors and observation count

Sector	Sector Description	DE	MNE	Total
Sector_10	Manufacture of food products	4400	75	4475
Sector_11	Manufacture of beverages	330	35	365
Sector_12	Manufacture of tobacco products	10	5	15
Sector_13	Manufacture of textiles	1925	50	1975
Sector_14	Manufacture of wearing apparel	4405	65	4470
Sector_15	Manufacture of leather and related products	2755	40	2795
Sector_16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1480	40	1520
Sector_17	Manufacture of paper and paper products	395	45	440
Sector_18	Printing and reproduction of recorded media	1100	20	1120
Sector_19	Manufacture of coke and refined petroleum products	0	5	5
Sector_20	Manufacture of chemicals and chemical products	485	45	530
Sector_21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	100	25	125
Sector_22	Manufacture of rubber and plastic products	1160	55	1215
Sector_23	Manufacture of other non-metallic mineral products	2090	45	2135
Sector_24	Manufacture of basic metals	235	25	260
Sector_25	Manufacture of fabricated metal products except machinery and equipment	4760	175	4935
Sector_26	Manufacture of computer, electronic and optical products	110	10	120

Sector_27	Manufacture of electrical equipment	445	45	490
Sector_28	Manufacture of machinery and equipment n.e.c.	1050	70	1120
Sector_29	Manufacture of motor vehicles, trailers and semi-trailers	470	40	510
Sector_30	Manufacture of other transport equipment	125	0	125
Sector_31	Manufature of furniture	1810	20	1830
Sector_32	Other manufacturing	535	10	545
Sector_33	Repair and installation of machinery and equipment	680	15	695
	Total Manufacturing obs.	30855	960	31815
	Total Manufacturing firms	6171	192	6363

Source: Own elaboration based on NACE Codes Rev. 2[3].

3.2. Empirical Model

Many previous studies that also focused on evaluating the performance of MNEs versus DEs used similar variables to those that we are about to use (Gomes & Ramaswamy, 1999; Contractor et al., 2003; Elango, 2006; Contractor et al., 2007) and applied Pooled Cross Section and Time Series regressions as their model. In this dissertation we'll present results in both panel data and cross-sectional analyses.

Firstly we use Pooled-OLS (Ordinary Least Squares) regression estimation which is a "pooled linear regression" that "assumes a constant intercept and slopes regardless of group and time period" (Park, 2011: 19). Combining the advantages of time-series with cross-sectional, Pooled-OLS will allow us to assess the performance differences of two sets of firms, concerning a set of dependent variables, over a period of time. Secondly, because of the 2008 crisis this time period could give us some atypical results, so we decided to use a cross-sectional model that would allow us to analyze individually each year and draw some conclusions.

Furthermore, each of these two estimation procedures will be used in order to investigate the effect of multinationality on performance using (a) the full database; (b) only manufacturing firms and (c) controlling for manufacturing subsectors.

Our main functional forms to be used in each regression are:

[3] Statistical Classification of Economic Activities in the European Community (EUROSTAT, 2008).

For Pooled-OLS:

(3.1) $Performance_i = \beta_0 + \beta_1 DNSUB_{i1} + \beta_2 MANUFACT_{i2} + \beta_3 LOGAGE_{i3} + \beta 4\ LOGAGE2_{i4} + \beta_5 LOGNEMP_{i5} + \beta_6 LOGNEMP2_{i6} + \beta_7 SECTOR\_10_{i7} + \ldots + \beta_{30} SECTOR\_33_{i30} + \varepsilon_i$

Where

"i" represents a firm, with "i" = 1 to 96.745 firms;

DNSUB = Dummy of Number of Subsidiaries;

MANUFACT = Dummy for Manufacturing firms;

SECTOR = Dummy for Manufacturing Sub-sectors, 24 sectors = 24 – 1 = 23 dummies, from Sector_10 to Sector_33.

For Cross-Sectional OLS:

(3.2) $Performance_i = \beta_0 + \beta_1 DOM_{i1} + \beta_2 MANUFACT_{i2} + \beta_3 LOGAGE_{i3} + \beta 4\ LOGAGE2_{i4} + \beta_5 LOGNEMP_{i5} + \beta_6 LOGNEMP2_{i6} + \beta_7 SECTOR\_10_{i7} + \ldots + \beta_{30} SECTOR\_33_{i30} + \varepsilon_i$

Where

DOM = Dummy for MNEs (=1 if MNE; =0 if DE).

3.3. Variables and Proxies

3.3.1. Dependent Variables

For the performance variables' selection we followed the empirical literature review presented on the previous section, which divided such performance measures into two major categories: Profitability and Productivity. As Productivity measure, we'll use Gross Value Added (GVA) (Davies & Lyons, 1991) divided Number of Employees Girma et al., 2004) yielding GVA per Employee (*GVApEmpl*). In order to measure

performance in terms of Profitability we will use (1) ROS (Grant, 1987; Grant et al., 1988; Geringer et al., 1989; Luo & Tan, 1998; Capar & Cotabe, 2003; Contractor et al., 2003; Qian et al., 2003; Brock et al., 2006; Chiao, et al., 2006; Coombs & Bierly, 2006; Contractor et al., 2007), (2) ROA (Grant, 1987; Grant et al., 1998; Geringer et al., 1989; Luo & Tan, 1998; Gomes & Ramaswamy, 1999; Lu & Beamish, 2001; Mathur et al., 2001; Contractor et al, 2003; Ruigrok & Wagner, 2003; Lu & Beamish, 2004; Barbosa & Louri, 2005; Coombs & Bierly, 2006; Kimura & Kiyota, 2007; Contractor et al., 2007; Adenaeuer & Heckelei, 2011), (3) ROE (Grant, 1987; Grant et al, 1988; Kim & Lyn, 1990; Mathur et al., 2001; Chiang & Yu, 2005; Hsu, 2006; Coombs & Bierly, 2006; Kimura & Kiyota, 2007; Contractor et al., 2007; Adenaeuer & Heckelei, 2011), (4) Profit Margin (Kim & Lyn, 1990; Elango, 2006; Adenaeuer & Heckelei, 2011). The operationalisation of this and other variables will be presented in Table 4.

3.3.2. Independent Variables

Main explanatory variable:

Although the literature suggests Foreign Sales to Total Sales ratio a popular proxy to use for a "Multinationality" variable, we have to take into account the reality of our data. We have firms that operate solely on national territory, thus, having no Foreign Sales at all.

Since our purpose is to make a comparison between MNEs and DEs, we introduce *dnsub* as main explanatory variable. This is an interaction variable composed by a dummy (MNE = 1; DE = 0) and by the Number of Subsidiaries each firm has. Thus, this variable assumes value =0 if it's a DE and ≠0 if it's a MNE. Not only it will allow us to understand the importance of being multinational but also give us a sense on how the degree of internationalization affects a firm's performance.

We expect MNEs to have a superior performance, so the expected signal is expected to be positive.

Multinational Dummy

We'll also use a dummy variable which assumes value of 1 if it's a MNE and 0 if it's a DE. This dummy is one of the components of the previously presented variable and it will prove itself useful for our cross-sectional models since there is no need to analyze the temporal development of the Multinational status, based on the number of subsidiaries. We expect a positive impact of this dummy on performance.

Manufacturing

For firm sector-specific considerations, we'll include a dummy of the NACE Rev. 2 (EUROSTAT, 2008) concerning the sector of the firms on our samples (*Manufact*) assuming 1 when it's a Manufacturing firm and 0 when it's not.

Age

Age is also a measure that has been used by some authors (Qian et al., 1003; Barbosa & Louri, 2005; Contractor et al., 2007). If Experience is a hard-to-imitate and non-substitutable asset (Resource-based View; Chapter 1.1.4.), and if it's also a result of continuous improvement, then Log of Number of Years (*logage*) is a very much correct proxy of this intangible asset, leading us to expect a positive effect.

In order to assess the behavior of the curve of this variable, we introduce *logage2* as the Squared Log of Number of Years. This will allow us to test a quadratic function and draw conclusions on the nonlinear relationship between Age and Performance.

Size

One of the explanatory variables is Size (Buckley et al., 1984; Grant, 1987; Lee & Kwok, 1988; Gomes & Ramaswamy, 1999; Lu & Beamish, 2001; Capar & Kotabe, 2003; Contractor et al., 2003; Qian, et al., 2003, Barbosa & Louri, 2005; Chiao et al., 2006; Hsu, 2006; Anastassopoulos et al., 2007; Contractor et al., 2007). Although some authors use Log of Total Sales as proxy for Firm Size, we will use the Log Number of Employees gives us a more stable/less volatile measure (henceforward *lognemp*). MNEs are, generally, larger than DEs.

In the line of what we did for the Age variables, Size is also another variable which we intend to know the behavior of its curve, hence, we introduce *lognemp2* as the Squared Log of Number of Employees.

We will employ the Log transformation to both dependent and independent variables in order to lead to more "robust measures" (Assaf et al., 2012: 198) and make "the distribution of the data closer to normality" (Contractor et al., 2007: 410).

In Table 5 we summarize the variables to be used in our estimations as well as their expected signal based on the literature review.

Table 5 - Variables

Variable Type	Name	Description	Expected Signal
Dependent Variables – Profitability	Logros	Log of Return on Sales = Log (Earnings Before Interest and Taxes / Sales)	
	Logroe	Log of Return on Equity = Log (Net Income / Equity)	
	Logroa	Log of Return on Assets = Log (Net Income / Total Assets)	
	logPM	Log of Profit Margin	
Dependent Variable - Productivity	loggvaemp	Log of Gross Value Added per Employee = Log (Gross Value Added / Number of Employees)	
Independent Variables	Dnsub	Degree of Internationalization variable (=0 if DE; ≠0 for number of subsidiaries of MNE).	+
	Dom	Dummy for Multinationals (=1 if MNE; =0 if DE).	+
	Manufact	Dummy variable of Manufacturing activities (= 1 if it's Manufacturer; = 0 otherwise)	-
	Logage	Log of Number of Years	+
	logage2	Squared Log of Number of Years	-
	Lognemp	Log of Number of Employees	-
	Lognemp2	Squared Log of Number of Employees	+

Source: Own elaboration.

3.3.3. Descriptive Analysis and Correlations

The descriptive statistics and correlations for the variables are presented in Table 6. The table shows us that besides ROE every other performance measure reflects better performance by MNEs with GVApEmpl being having the biggest difference (more than 17 times higher). MNE's Profit Margin mean is almost 7 times higher than the DE's. ROA and ROS show the smallest difference, but even so it is significant (around 3 times). So we can say that, on average, both Productivity and Profitability are higher for MNEs, when compared with DEs.

In Table 7 we have the correlation matrix showing a set of all-significant correlations for 1% of significance level, except between *dnsub* and logROE which have significant correlation at 5% of significance. There is a strong positive relationship between logPM and logROE, logROA and logROS as well as between logROE and logROA. LogAGE has positive correlation with only logGVAEMP and negative correlation with the rest of the dependent variables. LogNEMP shows a positive correlation with logGVAEMP and with logAGE

Table 6 - Descriptive Statistics

Type of Firm		GVApEmpl	profmarg	roe	roa	ros	dom	dnsub	nemp	age	manufact
MNE	Mean	481,867	8,512	-26,426	2,740	1926,592	1	9,451	435,474	27,478	0,363
	Median	40,054	2,910	6,617	2,098	5,372	-	3	123	23	-
	Std. Dev.	6293,982	48,126	1309,579	9,471	52344,440	0	31,234	1681,954	18,418	0,048
	Min.	0,065	-639,510	-57839,300	-207,588	-751948,800	1	1	10	0	0
	Max.	241661,400	930,140	6049,569	62,455	1167813	1	528	22734,000	96	1
DE	Mean	27,252	1,231	-0,034	0,895	674,993	0	0	43,917	20,214	0,212
	Median	19,099	1,540	5,051	1,310	3,813	-	-	20	17	-
	Std. Dev.	223,656	13,939	2889,762	22,179	118274,600	0	0	158,496	14,062	0,409
	Min.	0,012	-725,470	-609373,800	-4137,044	-14500000	0	0	10	0	0
	Max.	32262,300	908,980	496401,700	396,003	8777139	0	0	8574	144	1
Total	Mean	36,838	1,383	-0,890	0,934	703,464	0,021	0,199	51,194	20,367	0,215
	Median	19,316	1,560	5,091	1,324	3,849	-	0	20	18	-
	Std. Dev.	942,418	16,370	2865,447	21,989	117187,800	0,144	4,733	295,629	14,205	0,411
	Min.	0,012	-725,470	-609373,800	-4137,044	-14500000	0	0	10	0	0
	Max.	241662,400	930,140	496401,700	396,003	8777139	1	528,000	22734,000	144	1

Source: Own elaboration based on STATA outputs.

Table 7 - Correlation Matrix

	loggvaemp	logPM	logroe	logroa	logros	dnsub	dom	Manufact	logage	logage2	lognemp	lognemp2
loggvaemp	1,0000											
logPM	0,3601	1,0000										
logroe	0,0449	0,6625	1,0000									
logroa	0,2228	0,7944	0,8861	1,0000								
logros	0,1276	0,4232	0,2507	0,2659	1,0000							
dnsub	0,1809	0,0526	0,0075	0,0155	0,0206	1,0000						
dom	0,1963	0,0667	0,0122	0,0285	0,0195	0,2869	1,0000					
Manufact	-0,1218	-0,0299	-0,0661	-0,0615	-0,1699	-0,0083	0,0443	1,0000				
logage	0,1048	-0,0356	-0,2480	-0,1119	-0,0970	0,0274	0,0599	0,0822	1,0000			
logage2	0,1005	-0,0332	-0,2281	-0,1019	-0,1014	0,0316	0,0673	0,0852	0,9742	1,0000		
lognemp	0,1447	0,0270	0,0350	0,0339	0,0839	0,0817	0,2858	0,0931	0,1136	0,1274	1,0000	
lognemp2	0,1392	0,0309	0,0406	0,0401	0,0847	0,0943	0,3076	0,0738	0,1096	0,1234	0,9807	1,0000

Source: Own elaboration based on STATA outputs.

3.4. Econometric Models and Empirical Results

3.4.1. Pooled-OLS

Previously, in Section 3.2. – Empirical Model, we presented our general functional form. The squared elements of the regression had to be dropped because they were causing severe multicollinearity problems. We also applied a White-MacKinnon correction (Davidson & MacKinnon, 1993) therefore presenting robust standard errors.

Now, the model used to estimate each variable using Pooled-OLS is the following:

(3.3) $$Performance_i = \beta_0 + \beta_1 DNSUB_{i1} + \beta_2 MANUFACT_{i2} + \beta_3 LOGAGE_{i3} + \beta_4 LOGNEMP_{i4} + \varepsilon_i$$

Considering Table 8, we confirm both hypotheses that (H1) MNEs have better Profitability than DEs, given that the degree of internationalization in firm performance is positive and significant, as well as (H2) MNEs have better Productivity than DEs. Furthermore, for each increase in the number of subsidiaries, MNEs will have, on average, an increase of 2,33% on Productivity. In the case of Profitability, each increase in the degree of internationalization will impact an increase of 1,29% in Profit Margin, 0,28% in ROE, 0,42% in ROA and 0,56% in ROS. It is clear that these performance differences differ across performance measures, since an increase in the number of subsidiaries abroad has a higher impact in Productivity than in any other Profitability measure.

As predicted in the descriptive statistics through the correlation matrix, Age has a positive impact only in Productivity where for a 1% increase in Age, the Productivity is predicted to increase by 0,0865%. On the other hand, the Size of the firm is always a positive and significant contributor for the increase of both Productivity and Profitability. Return on Sales seems to be the variable which most benefits from an increase in the Number of Employees, followed by Return on Equity.

The Manufacturing dummy having a negative signal in every variable suggests that Manufacturing firms have less Productivity in, on average, 20,01%. The same goes for the Profitability values with a particular bigger result for LogROS (80,15%).

Table 8 - Pooled-OLS

	Pooled OLS				
	loggvaemp	**logPM**	**logroe**	**logroa**	**logros**
dnsub	0,0233***	0,0129***	0,0028***	0,0042***	0,0056***
	(0,0031)	(0,0031)	(0,0006)	(0,0010)	(0,0022)
Manufact	-0,2001***	-0,0805***	-0,1806***	-0,1879***	-0,8015***
	(0,0042)	(0,0099)	(0,0120)	(0,0118)	(0,0180)
logage	0,0865***	-0,0690***	-0,5570***	-0,2431***	-0,3174***
	(0,0029)	(0,0067)	(0,0077)	(0,0078)	(0,0138)
lognemp	0,1061***	0,0480***	0,1401***	0,0998***	0,3274***
	(0,0035)	(0,0061)	(0,0064)	(0,0064)	(0,0132)
Cons	2,4768***	0,9202***	3,0472***	1,0479***	2,3175***
	(0,0125)	(0,0255)	(0,0276)	(0,0282)	(0,0532)
R-sq.	0,0774	0,0058	0,0688	0,0184	0,0498
F-test	1122,46***	63,39***	1428,10***	352,17***	690,47***
No. Obs.	96486	74979	78682	76152	55691

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity
Significance level: ***p<1% ; **p<5% ; *p<10%
Source: Own elaboration based on STATA outputs.

Pooled-OLS, Only Manufacturing

Now let us see how these results are when applying the model only to our Manufacturing sample using:

(3.4) $\text{Performance}_i = \beta_0 + \beta_1 \text{DNSUB}_{i1} + \beta_2 \text{LOGAGE}_{i2} + \beta_3 \text{LOGNEMP}_{i3} + \varepsilon_i$

Since now we are testing for only manufacturing firms, it would make no sense keeping the Manufacturing dummy in the equation. Also, the Table 9 shows that we haven't used sub-sector dummies, yet.

Considering our Productivity variable, this new model shows us stronger value in our main dummy. So, for manufacturing firms, the increase in the number of subsidiaries abroad means even higher Productivity. The Profitability measures show the same result as the coefficient for logPM increased more than three times; eight times for ROE; more than six times for ROA, and so on.

Regarding Age, if anything, it became clearer that the more experienced a firm gets, the more Productive it is. Although the same doesn't happen with Profitability, this corroborates the Resource-based theory which states that as the firm grows bigger and more experienced, it becomes more efficient, hence, more Productive.

The results in these two sections are consistent with what was previously stated and found in the literature, that there is a positive relationship between internationalization and performance, whether it is measured by Profitability (Grant; 1987; Geringer et al., 1989; Qian et al., 2003) or Productivity (Davies & Lyons, 1991; Girma et al., 2004)

Table 9 - Pooled OLS, Only Manufacturing

Only Manufact.	**Pooled OLS**				
	loggvaemp	**logPM**	**logroe**	**logroa**	**logros**
dnsub	0,0509*** (0,0056)	0,0441*** (0,0061)	0,0225*** (0,0040)	0,0272*** (0,0044)	0,0145** (0,0062)
logage	0,0816*** (0,0044)	-0,1106*** (0,0115)	-0,6511*** (0,0138)	-0,3083*** (0,0139)	-0,2574*** (0,0171)
lognemp	0,1375*** (0,0047)	0,0539*** (0,0106)	0,0912*** (0,0125)	0,1150*** (0,0125)	0,0722*** (0,0138)
cons	2,1822*** (0,0181)	0,9334*** (0,0427)	3,2946*** (0,0504)	0,9915*** (0,0507)	2,1980*** (0,0621)
Used Sub-sector Dummies	No	No	No	No	No
R-sq.	0,0854	0,0077	0,0784	0,0214	0,0123
F-test	692,64***	57,36***	754,62***	193,14***	81,37***
No. Obs.	31739	24725	26150	25333	22748

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Pooled-OLS, Only Manufacturing, with Subsectors

By controlling for manufacturing sub-sector effect, we intend to understand whether or not the results presented in the previous section may be biased by the type of sector. The functional form to be used is:

(3.5) $\text{Performance}_i = \beta_0 + \beta_1 \text{DNSUB}_{i1} + \beta_2 \text{LOGAGE}_{i2} + \beta_3 \text{LOGNEMP}_{i3} + \beta_4 \text{SECTOR\_10}_{i4} + \ldots + \beta_{27} \text{SECTOR\_33}_{i27} + \varepsilon_i$

When placing more information to the model, this is how it reacted: all of the R-squared improved, all models are still globally significant.

Controlling the sample for all sectors we can see that the degree of internationalization is still positive and significant. As Table 10 shows, Size, for Productivity measure, increased its coefficient and now for each 1% increase in Size, the Productivity is predicted to increase by 0,1624%. LogPM, LogROE and LogROA still have positive and significant results for *dnsub* as before.

LogROS lost its significance concerning *dnsub*, but overall there is still evidence that both Profitability and Productivity of MNEs still outperform the ones of DEs, corroborating the previous estimations and the literature review.

Table 10 - Pooled OLS, Manufacturing, Subsectors

Only Manufact.	**Pooled OLS**				
	loggvaemp	**logPM**	**logroe**	**logroa**	**logros**
dnsub	0,0357*** (0,0039)	0,0369*** (0,0058)	0,0274*** (0,0040)	0,0282*** (0,0044)	0,0057 (0,0074)
logage	0,0080** (0,0039)	-0,1279*** (0,0117)	-0,6082*** (0,0140)	-0,2786*** (0,0141)	-0,2773*** (0,0167)
lognemp	0,1624*** (0,0040)	0,0530*** (0,0107)	0,0491*** (0,0129)	0,0779*** (0,0129)	0,0887*** (0,0138)
cons	2,5329*** (0,0165)	1,1791*** (0,0454)	3,2971*** (0,0542)	1,0718*** (0,0545)	2,7670*** (0,0662)
Used Sub-sector Dummies	Yes(a)	Yes(a)	Yes(a)	Yes(a)	Yes(a)
R-sq.	0,3318	0,0349	0,1019	0,0489	0,0729

F-test	680,98***	37,28***	126,44***	55,80***	59,60***
No. Obs.	31739	24725	26150	25333	22748

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

(a) Sectors 19 and 30 were omitted for having observations only for one type of firm, either DE or MNE, respectively.

Source: Own elaboration based on STATA outputs.

3.4.2. Cross-Section Model

As said before, in this section we will conduct the analysis of each dependent variable by year to see if the time period on which we are working with has effect on the estimations. This will also allow us to have a better understanding of how they've evolved from year to year.

Because it is cross-sectional estimation, we decided that it would be better to use a normal dummy as main explanatory variable. Also, in preliminary regressions, *dnsub* wasn't allowing the model to be both individual and global significant. Moreover, in this section we will apply the squared logarithms of Age and Size in order to ascertain whether there are or not curvilinear relationships for these variables. Again, for purposes of global and individual significance, these variables weren't applied to every single model that we are about to present.

We will follow the structure of the previous section, presenting the results for the full database, then only manufacture and lastly manufacturing controlling for subsector. The estimation results of cross-sectional analysis for the full database are presented in Appendix I, Tables 11 to 15.

Our Productivity measure keeps showing signs of better performance from MNEs. An interest detail is the signal between both normal Size and Age and their squared term. This variable is telling us that GVA per Employee will improve if both Size and Age increase but only until a certain point. Here we have evidence that Size and Age have an inverted u-shaped relationship with GVA per Employee.

Profit Margin, on the other hand, has the opposite of our Productivity measure. First, the squared logarithm of age had to be cut off for multicollinearity and individual

significance problems. Second, Size was only manageable to be significant in the year 2010. We must keep in mind that this five year period corresponds to a period of crisis and its aftermath. Perhaps this was the year when firms were already recovering from crisis, after some massive layoff, and were now under the minimum efficient scale, in need of hiring.

LogROE's model was globally significant but our main explanatory variable is only significant for 2010. Again, this might be a very atypical year to analyze and, again, we find evidence for a u-shaped curve for the variable Size. This negative impact from *lognemp* on the Profitability corroborates the negative relationship found by Capar & Kotabe (2003). For each year, Age has a negative impact on Profitability, suggesting a negative slope in a linear relationship. The same goes for Manufacturing dummy as it states that for Manufacturing firms there isn't necessarily positive evidence that they have better performance.

Like GVA per Employee and Profit Margin, ROA provided us an estimation output with both global and individual significance for all models, except 2012. We still find evidence of a u-shaped relationship from Profitability and Size. MNEs had better performance in each year, and Age is still a negative factor.

The regression of the Log of ROS shows us totally different values. If we focus on the year 2009, given that is our only year with *dom* significant, we get the multinational status as a negative contributing factor. Mathur et al., (2001) also concluded that multinationality was a contributor to lower performance, but when analyzing for a nonlinear relationship, they found evidence for a u-shaped relationship. Here we aren't able to assess whether there is a turning point for multinationality to be a positive factor. Maybe future investigations will be able to find more conclusive findings in this particular matter.

Table 11 - LogGVAEMP Cross-Section

	OLS - Log GVA per Employee				
	2008	**2009**	**2010**	**2011**	**2012**
Dom	0,8638***	0,8280***	0,8289***	0,7891***	0,7768***
	(0,0616)	(0,0622)	(0,0645)	(0,0629)	(0,0649)
Manufact	-0,2319***	-0,2452***	-0,2169***	-0,2082***	-0,1753***
	(0,0093)	(0,0091)	(0,0090)	(0,0092)	(0,0100)
logage	0,1702***	0,1642***	0,1982***	0,2622***	0,3341***
	(0,0223)	(0,0242)	(0,0338)	(0,0453)	(0,0593)
logage2	-0,0140***	-0,0142***	-0,0200***	-0,0303***	-0,0434***
	(0,0047)	(0,0049)	(0,0064)	(0,0082)	(0,0103)
lognemp	0,1990***	0,2015***	0,2111***	0,3180***	0,4476***
	(0,0365)	(0,0356)	(0,0341)	(0,0342)	(0,0350)
lognemp2	-0,0190***	-0,0183***	-0,0176***	-0,0284***	-0,0408***
	(0,0049)	(0,0048)	(0,0452)	(0,0045)	(0,0046)
Cons	2,3204***	2,3167***	2,0272***	1,8358***	1,3798***
	(0,0692)	(0,0699)	(0,0751)	(0,0865)	(0,1061)
R-sq.	0,0879	0,0875	0,0842	0,0820	0,0755
F-test	208,57***	216,01***	191,19***	202,85***	185,61***
No. Obs.	19106	19345	19345	19345	19345

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 12 - LogPM Cross-Section

	OLS - Log Profit Margin				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,5353***	0,4607***	0,6435***	0,6263***	0,6393***
	(0,0870)	(0,0888)	(0,0833)	(0,0875)	(0,0916)
Manufact	-0,1151***	-0,0660***	-0,0836***	-0,0807***	-0,0660***
	(0,0220)	(0,0217)	(0,0211)	(0,0225)	(0,0239)
logage	-0,0327**	-0,0299**	-0,0411***	-0,0442***	-0,0597***
	(0,0130)	(0,0131)	(0,0145)	(0,0170)	(0,0195)
logage2	-	-	-	-	-
lognemp	-0,1259*	-0,0299*	-0,1814***	-0,0010	0,0203**
	(0,0718)	(0,0680)	(0,0626)	(0,0754)	(0,0802)
lognemp2	0,0090	0,0117	0,0255***	0,0082	-0,0116
	(0,0091)	(0,0086)	(0,0077)	(0,0094)	(0,0101)
cons	1,4228***	1,3990***	1,311***	0,7560***	0,2938**
	(0,1344)	(0,1303)	(0,1248)	(0,1490)	(0,1588)
R-sq.	0,0068	0,0039	0,0086	0,0087	0,0122
F-test	16,91***	9,87***	23,96***	22,17***	31,40***
No. Obs.	14759	14856	16316	15187	13861

The numbers in parentheses are the Robust Std. Error corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 13 - LogROE Cross-Section

	OLS - Log ROE				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,0470 (0,0784)	0,0250 (0,0746)	0,1437** (0,0709)	0,1244 (0,0788)	0,0946 (0,0875)
Manufact	-0,2651*** (0,0253)	-0,2227*** (0,0249)	-0,1739*** (0,0246)	-0,0834*** (0,0283)	-0,1098*** (0,0318)
logage	-0,5125*** (0,0145)	-0,5239*** (0,0148)	-0,5243*** (0,0164)	-0,5391*** (0,0205)	-0,5299*** (0,0256)
logage2	-	-	-	-	-
lognemp	-0,2705*** (0,0674)	-0,0675 (0,0652)	-0,2017*** (0,0635)	-0,0863 (0,0740)	0,1403* (0,0804)
lognemp2	0,0405*** (0,0082)	0,0204*** (0,0078)	0,0416*** (0,0075)	0,0323*** (0,0087)	0,0106 (0,0094)
cons	3,9717*** (0,1309)	3,5875*** (0,1297)	3,6583*** (0,1301)	3,1940*** (0,1545)	2,5528*** (0,1703)
R-sq.	0,0879	0,0832	0,0693	0,0506	0,0396
F-test	296,08***	284,00***	243,02***	166,78***	118,17***
No. Obs.	16182	16309	16374	15414	14403

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 14 – LogROA Cross-Section

	OLS - Log ROA				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,1778**	0,1842**	0,2907***	0,2786***	0,1885**
	(0,0798)	(0,0762)	(0,0755)	(0,0808)	(0,0875)
Manufact	-0,2525***	-0,2410***	-0,1716***	-0,1086***	-0,1167***
	(0,0259)	(0,0251)	(0,0246)	(0,0271)	(0,0299)
logage	-0,0169***	-0,1990***	-0,2130***	-0,2211***	-0,2684***
	(0,0155)	(0,0151)	(0,0166)	(0,0200)	(0,0239)
logage2	-	-	-	-	-
lognemp	-0,2877***	-0,2192***	-0,3139***	-0,1676**	0,3347***
	(0,0713)	(0,0713)	(0,0668)	(0,0819)	(0,0779)
lognemp2	0,0365***	0,0308***	0,0470***	0,0358***	-0,0114
	(0,0086)	(0,0087)	(0,0080)	(0,0100)	(0,0093)
cons	1,8628***	1,8278***	1,8603***	1,2707***	0,1103
	(0,1390)	(0,1398)	(0,1356)	(0,1648)	(0,1643)
R-sq.	0,0174	0,0195	0,0184	0,0149	0,0245
F-test	53,15***	61,91***	61,67***	45,69***	71,85***
No. Obs.	15774	15938	16104	14878	13458

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 15 - LogROS Cross-Section

	OLS - Log ROS				
	2008	**2009**	**2010**	**2011**	**2012**
dom	-0,1924 (0,1368)	-0,3535** (0,1391)	0,0675 (0,1299)	0,0266 (0,1379)	0,1349 (0,1491)
Manufact	-0,7640*** (0,0400)	-0,7581*** (0,0401)	-0,7858*** (0,0381)	-0,8854*** (0,0400)	-0,8230*** (0,0432)
logage	-0,2659*** (0,0273)	-0,3011*** (0,0290)	-0,3062*** (0,0301)	-0,3129*** (0,0343)	-0,3696*** (0,0381)
logage2	-	-	-	-	-
lognemp	0,2843*** (0,0329)	0,2899*** (0,0317)	0,3185*** (0,0289)	0,3737*** (0,0310)	0,3999*** (0,0317)
lognemp2	-	-	-	-	-
cons	2,3724*** (0,1150)	2,4617*** (0,1193)	2,2957*** (0,1172)	2,1103*** (0,1314)	2,1855*** (0,1427)
R-sq.	0,0422	0,0439	0,0487	0,0572	0,0569
F-test	120,05***	124,17***	144,70***	162,78***	136,27***
No. Obs.	11341	11028	11905	11263	10154

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity
Significance level: ***p<1% ; **p<5% ; *p<10%
Source: Own elaboration based on STATA outputs.

Cross-section, Only Manufacturing

In Appendix II (Tables 16 to 20) are the regression outputs for the Manufacturing sample.

For Log of GVA per Employee we observe a small drop in the coefficients of *dom*, but they are still positive and significant, confirming that multinationality does impact positively on Productivity. Age has a significant improvement as it increases Productivity even more for manufacturing firms, when comparing with the total sample. The same happens for Size, where besides an increase when comparing with the full dataset, there is also an increase from year to year.

The Profitability measures show, again, a different reality from Productivity. Here both Age and Size are negative contributors for the performance, showing

evidence for Profit Margin. The other Profitability variables still have Age showing negative impact, but Size is positive and significant. The *dom* dummy is positive and significant for every variable. ROS wasn't able to produce any significant evidence, so we won't be drawing any interpretation.

Table 16 - LogGVAEMP Cross-Section, Manufacturing

	OLS - Log GVA per Employee				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,5368*** (0,0525)	0,5017*** (0,0525)	0,5129*** (0,0518)	0,4892*** (0,0540)	0,4089*** (0,0626)
logage	0,0949*** (0,0086)	0,0924*** (0,0089)	0,0880*** (0,0099)	0,0832*** (0,0109)	0,0869*** (0,0124)
logage2	-	-	-	-	-
lognemp	0,0998*** (0,0100)	0,0998*** (0,0104)	0,1134*** (0,0099)	0,1345*** (0,0099)	0,1588*** (0,0101)
lognemp2	-	-	-	-	-
cons	2,2968*** (0,0363)	2,2862*** (0,0377)	2,2593*** (0,0386)	2,1651*** (0,0414)	2,0313*** (0,0459)
Used Sub-sector Dummies	No	No	No	No	No
R-sq.	0,0948	0,0842	0,0923	0,0958	0,0904
F-test	150,11***	138,10***	146,25***	153,88***	161,15***
No. Obs.	6295	6361	6361	6361	6361

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 17 - LogPM Cross-Section, Manufacturing

	OLS - Log Profit Margin				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,3379***	0,0816	0,3290***	0,3793***	0,2314**
	(0,1070)	(0,1246)	(0,1091)	(0,1004)	(0,1094)
logage	-0,0280	-0,0590***	-0,0907***	-0,1266***	-0,1245***
	(0,0230)	(0,0223)	(0,0253)	(0,0292)	(0,0321)
logage2	-	-	-	-	-
lognemp	-0,4877***	-0,5593***	-0,6335***	-0,3445***	-0,1435
	(0,1546)	(0,1399)	(0,1282)	(0,1318)	(0,1331)
lognemp2	0,0579***	0,0732***	-0,0867***	0,0572***	0,0372**
	(0,0204)	(0,0183)	(0,0165)	(0,0169)	(0,0171)
cons	1,9301***	2,1788***	2,1652***	1,4918***	1,0102***
	(0,2801)	(0,2594)	(0,2437)	(0,2549)	(0,2614)
Used Sub-sector Dummies	No	No	No	No	No
R-sq.	0,0061	0,0059	0,0123	0,0152	0,0145
F-test	7,40***	6,99***	16,31***	20,36***	18,60***
No. Obs.	4836	4710	5392	5010	4777

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 18 - LogROE Cross-Section, Manufacturing

	OLS - Log ROE				
	2008	**2009**	**2010**	**2011**	**2012**
Dom	0,1748 (0,1241)	0,0045 (0,1219)	0,2926*** (0,1086)	0,1252 (0,1103)	-0,0130 (0,1229)
logage	-0,8257*** (0,0980)	-1,1775*** (0,1119)	-1,2704*** (0,1598)	-1,8314*** (0,2139)	-2,2338*** (0,2740)
logage2	0,0559*** (0,0208)	0,1158*** (0,0226)	0,1212*** (0,0299)	0,2085*** (0,0382)	0,2698*** (0,0476)
lognemp	-0,0466 (00293)	0,0284 (0,0295)	0,0606** (0,0269)	0,1411*** (0,0297)	0,1940*** (0,4072)
lognemp2	-	-	-	-	-
Cons	3,8323*** (0,1443)	4,1360*** (0,1646)	4,1791*** (0,2279)	4,6421*** (0,3125)	4,9750*** (0,4071)
Used Sub-sector Dummies	No	No	No	No	No
R-sq.	0,0921	0,0976	0,0824	0,0704	0,0590
F-test	133,09***	142,13***	121,12***	99,41***	83,59***
No. Obs.	5353	5268	5427	5124	4978

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 19 - LogROA Cross-Section, Manufacturing

	OLS - Log ROA				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,2308* (0,1220)	0,1472 (0,1244)	0,3854*** (0,1146)	0,3085*** (0,1116)	0,0722 (0,1208)
logage	-0,2038*** (0,0280)	-0,2520*** (0,0267)	-0,3106*** (0,0305)	-0,3383*** (0,0340)	-0,3617*** (0,0401)
logage2	-	-	-	-	-
lognemp	-0,0098 (0,0296)	0,0264 (0,0293)	0,0709** (0,0276)	0,1727*** (0,0292)	0,2886*** (0,0312)
lognemp2	-	-	-	-	-
cons	1,2066*** (0,1077)	1,2738*** (0,1079)	1,2343*** (0,1116)	0,7883*** (0,1246)	0,2934** (0,1416)
Used Sub-sector Dummies	No	No	No	No	No
R-sq.	0,0123	0,0163	0,0227	0,0261	0,0316
F-test	20,03***	30,01***	39,93***	48,52***	52,95***
No. Obs.	5228	5140	5345	4939	4681

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 20 - LogROS Cross-Section, Manufacturing

	OLS - Log ROS				
	2008	**2009**	**2010**	**2011**	**2012**
dom	-0,0297 (0,1115)	-0,2008 (0,1388)	0,1327 (0,1086)	0,1610 (0,1176)	-0,0057 (0,1172)
logage	-0,1890*** (0,0332)	-0,2490*** (0,0367)	-0,2358*** (0,0383)	-0,2953*** (0,0430)	-0,2636*** (0,0466)
logage2	-	-	-	-	-
lognemp	-0,0002 (0,0309)	0,0302 (0,0324)	0,0834*** (0,0305)	0,1302*** (0,0326)	0,1342*** (0,0326)
lognemp2	-	-	-	-	-
cons	2,3434*** (0,1210)	2,4078*** (0,1339)	2,0938*** (0,1404)	1,9919*** (0,1543)	1,9445*** (0,1708)
Used Sub-sector Dummies	No	No	No	No	No
R-sq.	0,0089	0,0135	0,0106	0,0162	0,0162
F-test	11,90***	16,58***	15,73***	22,31***	22,31***
No. Obs.	4662	4455	4813	4566	4566

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity
Significance level: ***p<1% ; **p<5% ; *p<10%
Source: Own elaboration based on STATA outputs.

Cross-section, Only Manufacturing, with Subsectors

When controlling for manufacturing subsectors, we observe in Appendix III (Tables 21 to 25) that Productivity still has a significant model with *dom* remaining as positive and significant element. This corroborates the previous evidences of better performance from MNEs, comparing with DEs. Also, as we saw before, Productivity is positively influenced by both Size (evidence for all five years) and Age (evidence only for the first two). In fact, these are even greater results given that our R-squared has a major increase when comparing with the previous two estimations for this variable. So, we can say with absolute confidence that Productivity if positively influenced by the

multinational status of the firm (Ramstetter, 1999; Girma et al., 2004; Hayakawa et al., 2012) as well as by Size and Age.

For all the significant years, all Profitability variables have an increase if a firm is MNE, except ROS. The year 2009 was clearly a bad year for MNEs concerning ROS. Age, on the other hand is not a positive contributor for Profitability. The opposite happens for Size, except for Profit Margin. Size positively affects performance in terms of ROE, ROA and ROS, but negatively in terms of Profit Margin. Profit Margin also shows evidence of a u-shaped relationship between Size and Profitability, meaning that there is a hurdle after which the firm starts to increase in its Profit Margins.

Table 21 – LogGVAEMP Cross-Section, Manufacturing with Subsectors

	OLS - Log GVA per Employee				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,3325*** (0,0476)	0,2914*** (0,0475)	0,3082*** (0,0468)	0,2912*** (0,0488)	0,2151*** (0,0586)
logage	0,0289*** (0,0077)	0,0162** (0,0079)	0,0094 (0,0086)	0,0036 (0,0099)	0,0054 (0,0116)
logage2	-	-	-	-	-
lognemp	0,1338*** (0,0087)	0,1387*** (0,0092)	0,1462*** (0,0085)	0,1655*** (0,0089)	0,1887*** (0,0092)
lognemp2	-	-	-	-	-
cons	2,6101*** (0,0336)	2,6023*** (0,0247)	2,5970*** (0,0349)	2,5196*** (0,0386)	2,3814*** (0,0468)
Used Sub-sector Dummies	Yes	Yes	Yes	Yes	Yes
R-sq.	0,3689	0,3438	0,3545	0,3279	0,2800
F-test	159,99***	149,77***	147,40***	126,73***	109,13***
No. Obs.	6295	6361	6361	6361	6361

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 22 – LogPM Cross-Section, Manufacturing with Subsectors

	OLS - Log Profit Margin				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,2331**	-0,0071	0,2278**	0,3011***	0,1541
	(0,1056)	(0,1268)	(0,1085)	(0,0993)	(0,1083)
logage	-0,0460*	-0,0834***	-0,1159***	-0,1338***	-0,1247***
	(0,0235)	(0,0230)	(0,0261)	(0,0296)	(0,0326)
logage2	-	-	-	-	-
lognemp	-0,4422***	-0,4777***	-0,5625***	-0,3473***	-0,1826
	(0,1535)	(0,1422)	(0,1289)	(0,1323)	(0,1352)
lognemp2	0,0524***	0,0633***	0,0783***	0,0577***	0,0413**
	(0,0202)	(0,0186)	(0,0166)	(0,0169)	(0,0173)
cons	2,1114***	2,2627***	2,3064***	1,7014***	1,2785***
	(0,2796)	(0,2650)	(0,2454)	(0,2575)	(0,2667)
Used Sub-sector Dummies	Yes	Yes	Yes	Yes	Yes
R-sq.	0,0417	0,0332	0,0408	0,0472	0,0482
F-test	9,67***	6,55***	9,16***	10,74***	10,47***
No. Obs.	4836	4710	5392	5010	4777

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 23 - LogROE Cross-Section, Manufacturing with Subsectors

	OLS - Log ROE				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,1418 (0,1269)	0,0094 (0,1232)	0,3166*** (0,1098)	0,2403** (0,1119)	0,1207 (0,1240)
logage	-0,8218*** (0,0982)	-1,1290*** (0,1135)	-1,1669*** (0,1609)	-1,6752*** (0,2167)	-2,1589*** (0,2759)
logage2	0,0600*** (0,0208)	0,1119*** (0,0228)	0,1101*** (0,0300)	0,1933*** (0,0388)	0,2714*** (0,0479)
lognemp	-0,0653** (0,0298)	0,0007 (0,0304)	0,0207 (0,0278)	0,0816*** (0,0307)	0,1177*** (0,0335)
lognemp2	-	-	-	-	-
cons	4,0313*** (0,1503)	4,1608*** (0,1719)	4,0962*** (0,2356)	4,4011*** (0,3202)	4,8468*** (0,4141)
Used Sub-sector Dummies	Yes	Yes	Yes	Yes	Yes
R-sq.	0,1233	0,1306	0,1081	0,0990	0,0869
F-test	29,14***	31,72***	26,80***	23,28***	20,50***
No. Obs.	5353	5268	5427	5124	4978

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 24 - LogROA Cross-Section, Manufacturing with Subsectors

	OLS - Log ROA				
	2008	**2009**	**2010**	**2011**	**2012**
dom	0,1705 (0,1243)	0,0970 (0,1260)	0,3657*** (0,1151)	0,3511*** (0,1132)	0,1256 (0,1228)
logage	-0,1867*** (0,0287)	-0,2399*** (0,0273)	-0,2797*** (0,0314)	-0,2856*** (0,0347)	-0,2943*** (0,0407)
logage2	-	-	-	-	-
lognemp	-0,0303 (0,0301)	0,0091 (0,0300)	0,0380 (0,0284)	0,1215*** (0,0299)	0,2216*** (0,0323)
lognemp2	-	-	-	-	-
cons	1,4078*** (0,1152)	1,3923*** (0,1150)	1,2717*** (0,01186)	0,7594*** (0,1318)	0,2704*** (0,1500)
Used Sub-sector Dummies	Yes	Yes	Yes	Yes	Yes
R-sq.	0,0500	0,0566	0,0518	0,0620	0,0637
F-test	10,70***	13,16***	12,82***	15,45***	14,59***
No. Obs.	5228	5140	5345	4939	4681

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Table 25 - LogROS Cross-Section, Manufacturing with Subsectors

	OLS - Log ROS				
	2008	**2009**	**2010**	**2011**	**2012**
dom	-0,1392 (0,1139)	-0,3620** (0,1408)	-0,0016 (0,1049)	0,0520 (0,1093)	-0,1056 (0,1112)
logage	-0,1974*** (0,0322)	-0,2686*** (0,0363)	-0,2703*** (0,0375)	-0,3193*** (0,0415)	-0,2867*** (0,0451)
logage2	-	-	-	-	-
lognemp	0,0132 (0,0308)	0,0597** (0,0325)	0,1101*** (0,0302)	0,1547*** (0,0324)	0,1496*** (0,0327)
lognemp2	-	-	-	-	-
cons	2,9050*** (0,1360)	2,9310*** (0,1476)	2,7167*** (0,1467)	2,5286*** (0,1567)	2,5152*** (0,1772)
Used Sub-sector Dummies	Yes	Yes	Yes	Yes	Yes
R-sq.	0,0698	0,0730	0,0820	0,0831	0,0746
F-test	11,60***	11,10***	15,34***	14,41***	13,25***
No. Obs.	4662	4455	4813	4566	4252

The numbers in parentheses are the Robust Std. Err. Corrected for Heteroskedasticity

Significance level: ***p<1% ; **p<5% ; *p<10%

Source: Own elaboration based on STATA outputs.

Chapter 4. Conclusions and Policy Implications

4.1. Conclusions

The main focus of this dissertation was to test performance differences between two types of firms (MNEs and DEs) and whether these differences, if any, differ across a set of variables. There are many studies that treat this matter but only focusing on the relationship between the two components (Multinationality and Performance), as this dissertation presents a different perspective, aiming for the comparison between two sets of firms and using different proxies to verify the performance difference across different types of variables. Also, there isn't any other study, to the best of our knowledge, that deals with performance comparison, focusing on OFDI and testing for differences between Manufacturing and non-Manufacturing firms.

Being a Multinational Enterprise means higher performance, as shown before, with the only exception for when it comes to ROS analysis. But even that was only a single year observation showing different results. ROS in all Pooled models showed positive influence of Multinationality on Profitability.

The findings also suggest that MNEs have much better Productivity than DEs. It's a performance gap even higher than all of Profitability measures. This can be explained by the economies of scale that a MNE is able to get. The Eclectic Paradigm also predicts this outcome when it states that a MNE has the advantage in common governance, transport infrastructures, a wider and more efficient supplying network. This means that becoming a MNE compensates all the serious business-related risks that a firm undertakes when going global – although not every firm is fit to become multinational.

The variables used in our models present evidence that for Productivity, Age is a positive contributor and for Profitability is a negative contributor. Size, however, presents a unanimous and positive influence on Performance. As a firm gets larger, the better it performs. This might have something to do with the Multinational's ability to diversify its value chain optimizing it throughout its area of activity.

4.2. Policy Implications

Becoming a MNE, as said before, isn't a simple process. And not every firm is able to do it. Portugal has some credit lines that help firms starting to internationalize through exports, but there's more than that. Invoking the both the Eclectic Paradigm, Resource-based view and the Network Theory, becoming Multinational requires a certain level of knowledge, ownership and connections without which the process will likely fail. AICEP is doing helping firms in terms of knowledge of external markets, local connections abroad, etc, but the ownership part is still difficult to overcome. For domestic firms it's impossible to suddenly obtain these ownership advantages. The entry to a new market by a DE should be accompanied by both Governments from country of origin and country of destination and the Portuguese Government should assist the DE in order for it to get the ownership advantages needed. For instance, the government should deal with a local firm that also wishes to internationalize, permitting facilitating its entry in return of assistance to the Portuguese MNE-to-be. In some way this is already happening, but not as proactively as it needs. The Foreign Affairs Ministry should open a platform of applications for DEs who wish to internationalize and become global but lack of something crucial for the process to begin. Concisely, there should be more policies promoting internationalization through outward FDI.

4.3. Future research

Further researches can be made from this one. For starters, this study could be applied to a variety of countries – European Union, Euro-Zone, NAFTA. vs. EU and so on – creating a cross-country analysis and whether, or not, MNEs that outperform DEs are from countries that export more or less, etc.

It should be interesting to expand the set of independent variables of each firm. We weren't able to do so because of the quality of our database, but with some previous work on that and getting a complete and balanced database, it could be possible. Using a different time period can also be positive. We used this time period because it had the most data quality but we must keep in mind that this was a period of economic struggle.

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Annex I – List of Empirical Studies

Authors	Year	Title	Sample	Measures Used	Result
Hayakawa, Matsuura, Motohashi & Obashi	2013	Two-dimensional analysis of the impact of outward FDI on performance at home: Evidence from Japanese manufacturing firms	Sample 1: all Japanese firms with more than 50 employees; Sample 2: constructed by aggregating the manufacturing plant-level census data, Census of Manufacturers on a firm basis; 1992 to 2005	Productivity	Advantage MNE
Adenaeuer & Heckelei	2011	FDI and the performance of European Agribusiness Firms	1687 firms with plants only in EU-15; 314 firms with in and out of EU-15	Productivity; Profitability	Advantage MNE
Imbriani, Pittiglio & Reganati	2011	Outward Foreign Direct Investment and Domestic Performance: the Italian Manufacturing and Services Sectors	1658 firms. data for Italy for the period 2003–2006	Others	Advantage MNE
Chen & Hsu	2010	Internationalization, Resource Allocation and Firm Performance	224 Taiwan Stock Exchange-listed eletronics & IT firms (2000-2005)	Profitability	Advantage MNE
Temouri, Driffield & Higón	2008	Analysis of Productivity Differences among Foreign and Domestic Firms: Evidence from Germany	22 manufacturing firms; 17 service firms; 1995-2004	Productivity	Advantage MNE
Anastassopoulos, Filippaios & Phillips	2007	An "eclectic" investigation of tourism multinationals' activities: Evidence from the Hotels and Hospitality Sector in Greece	95 firms; (1995-2004)	Productivity; Profitability	Advantage MNE
Chari, Devaraj & David	2007	International diversification and firm performance: Role of Information Technology Investments	131 firms, 1997	Profitability	Advantage MNE

Contractor, Kumar & Kundu	2007	Nature of the Relationship between international expansion and performance: The case of emerging markets firms	269 indian firms, 1997-2001. 142 manufacturing; 127 services	Profitability	Advantage MNE
Kimura & Kiyota	2007	Foreign-owned vs Domestically-owned firms: economic performance in Japan	22.250 firms (21.716 DOs; 534 FO) between 1994 and 1998)	Profitability; Productivity	Advantage MNE
Brock, Yaffe & Dembovsky	2006	International diversification and performance: a study of global law firms	76 US firms; 13 UK firms (2003)	Profitability	Advantage MNE
Chiao, Yang & Yu	2006	Performance, Internationalization and Firm-Specific Advantages of SMEs in a Newly-Industrialized Economy	1419 Taiwanese SMEs (1996). 818 electronics industry + 601 textile	Profitability	Advantage MNE
Elango	2006	An Empirical Analysis of the Internationalization-Performance Relationship Across Emerging Market Firms	719 firms from 12 emerging markets. 393 manufacturing, 326 services	Profitability	Advantage MNE
Hsu	2006	Internationalization and Performance: The S-curve Hypothesis and Product Diversity Effect	55 global pharmaceutical/ biotechnological firms; (1996-2000); many countries	Profitability	Advantage MNE
Barbosa & Louri	2005	Corporate Performance: Does ownership matter? A comparison of Foreign- and Domestic-Owned Firms in Greece and Portugal	523 Portuguese firms (1992); 2651 Greek firms (1997)	Profitability	Inconclusive

Chiang & Yu	2005	The Relationship between Multinationality and the Performance of Taiwan firms	119 Taiwanese Companies, 1998-2002 = 595 observations	Profitability	Advantage MNE
Girma, Gorg & Strobl	2004	Exports, international investment, and plant performance: evidence from a non-parametric test	Manufacturing plants in Republic of Ireland with more than 10 employees; year 2000.	Productivity	Advantage MNE
Lu & Beamish	2004	International Diversification and Firm performance: the s-curve hypothesis	1489 Japanese firms, 1987 to 1997	Profitability	Advantage MNE
Capar & Kotabe	2003	The Relationship between International Diversification and Performance in Service Firms	81 German service firms (1997 - 1999)	Profitability	Advantage MNE
Contractor, Kundu & Hsu	2003	A three-stage theory of international expansion: the link between multinationality and performance in the service sector	11 service industries, 103 firms	Profitability	Advantage MNE
Qian, Yang & Wang	2003	Does multinationality affect profit performance? Na empirical study of SMEs	271 US firms (1993-1997)	Profitability	Advantage MNE
Kotabe, Srinivasan & Aulakh	2002	Multinationality and Firm Performance: The Moderating Role of R&D and Marketing Capabilities	49 US firms from 12 different industries; 1987-1993	Profitability	Advantage MNE
Lu & Beamish	2001	The internationalization and Performance of SMEs	164 Japanese SMEs from19 different industries, as defined by the Nikkei stock market; 1986-1997	Profitability	Advantage MNE

Mathur, Singh & Gleason	2001	The evidence from Canadian firms on multinational diversification and performance	427 (1997) Canadian firms; 1992–1994 and 1997	Profitability	Advantage DE
Gomes & Ramaswamy	1999	An empirical examination of the form of the relationship between multinationality and performance	95 firms (28 chemicals; 14 drugs and pharmaceuticals; 24 computers and computer office; 29 electrical products)	Profitability	Advantage MNE
Ramstetter	1999	Comparisons of Foreign Multinationals and Local Firms in Asian Manufacturing Over Time	firms from Hong-King; Malaysia; Indonesia; Singapore; Taiwan; 1970 to 1996	Productivity	Advantage MNE
Luo & Tan	1998	A comparison of multinational and domestic firms in na emerging market: a strategic choice perspective	60 state Chinese firms (electronics industry); 51 MNE subunits	Profitability	Inconclusive
Al-Obaidan & Scully	1995	The Theory and measurement of the net benefits of multinationality: the case of the international petroleum industry	44 oil companies, 1976-82; 25 different countries	Productivity	Inconclusive
Davies & Lyons	1991	Characterising relative performance: The productivity advantage of foreign owned firms in the UK	(1971-1987)	Productivity	Advantage MNE
Collins	1990	A market performance comparison of US firms active in Domestic, Developed and developing countries	133 firms (51 domestic, 44 in developed countries, 38 in developing countries), from January 1976 to June 1985	Profitability	Advantage MNE
Kim & Lyn	1990	FDI theories and the performance of foreign multinationals operating in the US	54 firms from different countries; 1980-1984	Profitability	Advantage DE

Geringer, Beamish & DaCosta	1989	Diversification strategy and internationalization implications for MNE performance	200 MNE (US and European), 1982 - 1983	Profitability	Advantage MNE
Lee & Kwok	1988	Multinational Corporations vs Domestic Corporations: International Environmental Factors	834 firms (421 domestic; 413 MNE-10%; 231 Mne-25%); US and non-US firms	Profitability	Advantage MNE
Benvignati	1987	Domestic Profit Advantages of Multinational Firms	2635 lines of business of 457 US manufacturing firms, 1975	Profitability	Advantage MNE
Grant	1987	Multinationality and performance among British manufacturing companies	304 large firms, 1972-1984	Profitability	Advantage MNE
Michel & Shaked	1986	Multinational Corporations vs Domestic Corporations: financial performance and characteristics	58 US-based MNEs; 43 DMCs; 1973 - 1982;	Profitability	Advantage DE
Buckley, Dunning & Pearce	1984	An analysis of the growth and profitability of world's largest firms between 1972 and 1977	535 firms in 1972, 866 firms in 1977; US and non-US firms.	Profitability	Inconclusive
Brewer	1981	Investor Benefits from corporate international diversification	151 US-based MNEs; 137 US Nationals. Jan 1963-Dec 1975	Profitability	Advantage MNE

Source: Own elaboration.